NOTICE

This manual was written by the Yamaha Motor Company primarily for use by Yamaha dealers and their qualified mechanics. It is not possible to put an entire mechanic's education into one manual, so it is assumed that persons using this book to perform maintenance and repairs on Yamaha motorcycles have a basic understanding of the mechanical concepts and procedures inherent in motorcycle repair technology. Without such knowledge, attempted repairs or service to this model may render it unfit to use and/or unsafe.
Yamaha Motor Company, Ltd. is continually striving to improve all models manufactured by Yamaha. Modifications and significant changes in specifications or procedures will be forwarded to all Authorized Yamaha dealers and will, where applicable, appear in future editions of this manual.

NOTE:
This Service Manual contains information regarding periodic maintenance to the emission control system for the FZR600W/WC. Please read this material carefully.

TECHNICAL PUBLICATIONS
SERVICE DIVISION
MOTORCYCLE GROUP
YAMAHA MOTOR CO., LTD.

HOW TO USE THIS MANUAL

PARTICULARLY IMPORTANT INFORMATION

This material is distinguished by the following notation.

NOTE: A **NOTE** provides key information to make procedures easier or clearer.

⚠ CAUTION: **A CAUTION** indicates special procedures that must be followed to avoid damage to the motorcycle.

⚠ WARNING: **A WARNING** indicates special procedures that must be followed to avoid injury to a motorcycle operator or person inspecting or repairing the motorcycle.

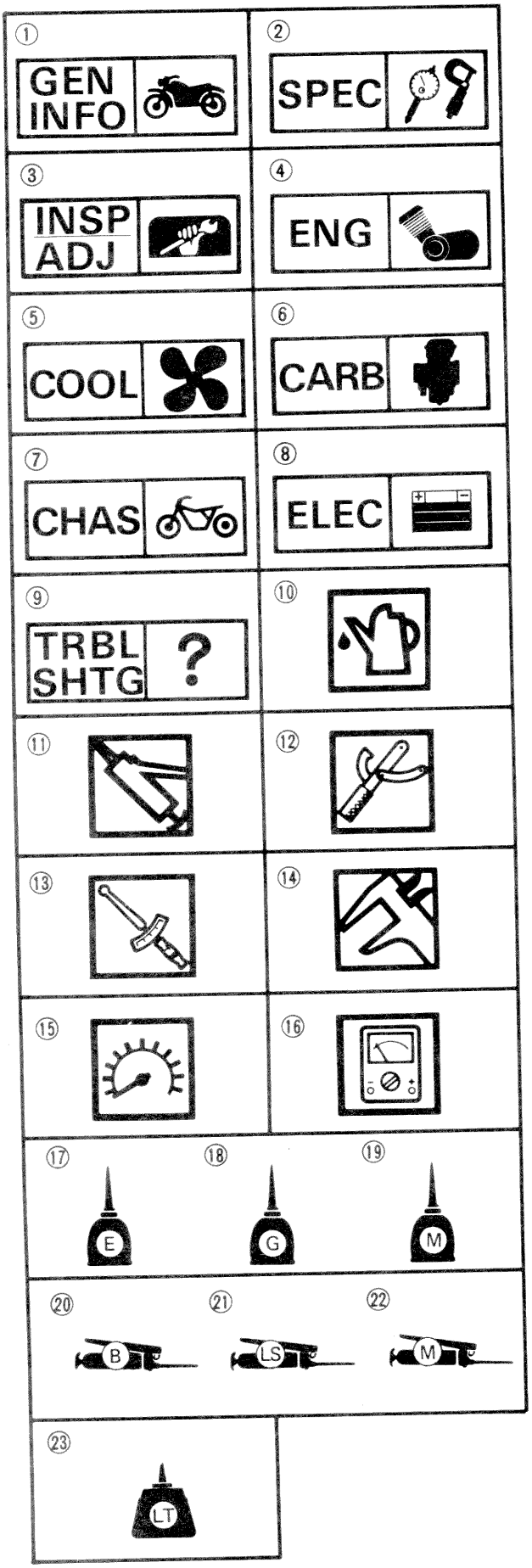
MANUAL FORMAT

All of the procedures in this manual are organized in a sequential, step-by-step format. The information has been compiled to provide the mechanic with an easy to read, handy reference that contains comprehensive explanations of all disassembly, repair, assembly, and inspection operations.
In this revised format, the condition of a faulty component will precede an arrow symbol and the course of action required will follow the symbol, e.g.,

- Bearings
  Pitting/Damage → Replace.

EXPLODED DIAGRAM

Each chapter provides exploded diagrams before each disassembly section for ease in identifying correct disassembly and assembly procedures.



ILLUSTRATED SYMBOLS
(Refer to the illustration)

Illustrated symbols ① to ⑨ are designed as thumb tabs to indicate the chapter's number and content.

① General information
② Specifications
③ Periodic inspection and adjustment
④ Engine
⑤ Cooling system
⑥ Carburetion
⑦ Chassis
⑧ Electrical
⑨ Troubleshooting

Illustrated symbols ⑩ to ⑯ are used to identify the specifications appearing.

⑩ Filling fluid
⑪ Lubricant
⑫ Special tool
⑬ Tightening
⑭ Wear limit, clearance
⑮ Engine speed
⑯ Ω, V, A

Illustrated symbols ⑰ to ㉓ in the exploded diagram indicate grade of lubricant and location of lubrication point.

⑰ Apply engine oil
⑱ Apply gear oil
⑲ Apply molybdenum disulfide oil
⑳ Apply wheel bearing grease
㉑ Apply lightweight lithium-soap base grease
㉒ Apply molybdenum disulfide grease
㉓ Apply locking agent (LOCTITE®)

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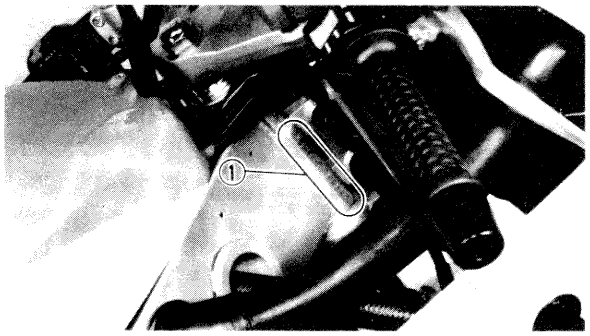


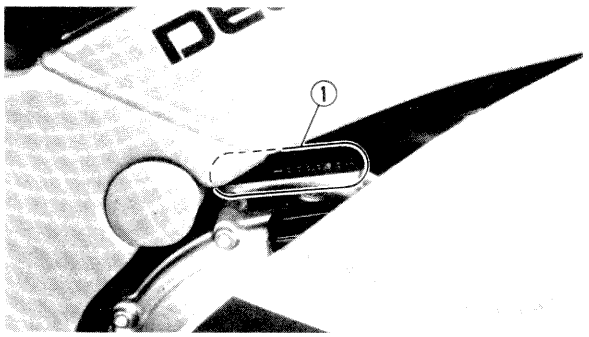
GENERAL INFORMATION

MOTORCYCLE IDENTIFICATION

VEHICLE IDENTIFICATION NUMBER

The vehicle identification number ① is stemped into the right side of the steering head.

Starting Serial Number:
FZR600W (Except for California):
JYA3HHE0 * KA000101
FZR600WC (For California):
JYA3HWC0 * KA000101



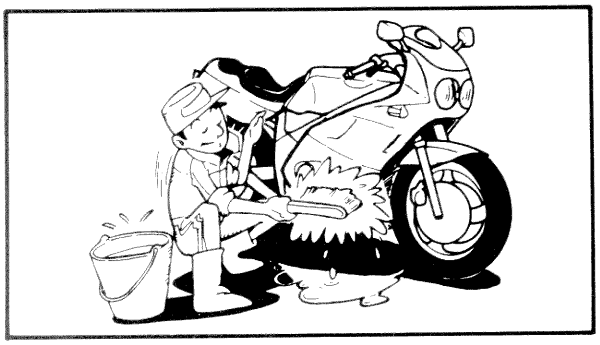
ENGINE SERIAL NUMBER

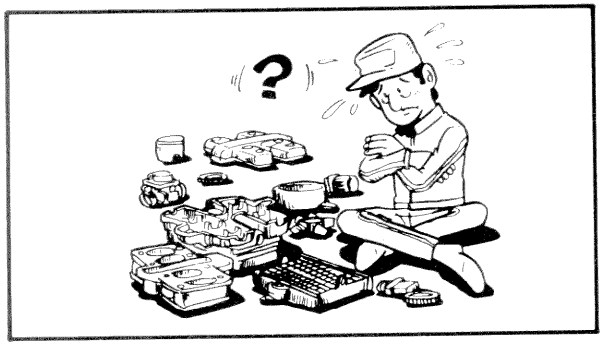
The engine serial number ① is stamped into the right side of the engine.

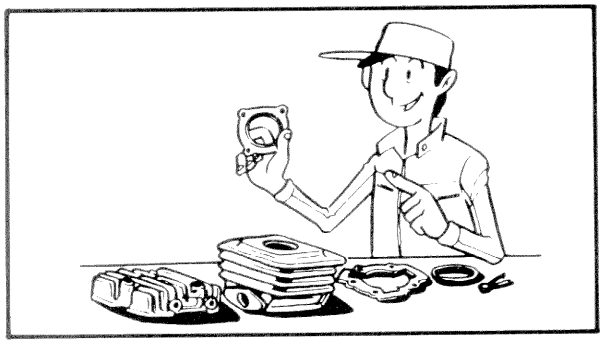
Starting Serial Number:
FZR600W (Except for California):
3HH-000101
FZR600WC (For California):
3HW-000101

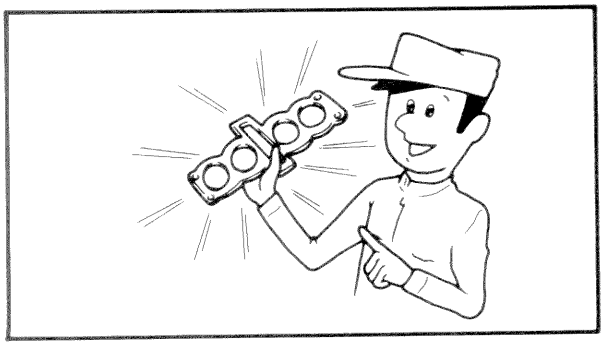
NOTE:

- The first three digits of these numbers are for model identifications; the remaining digits are the unit production number.
- Designs and specifications are subject to change without notice.









IMPORTANT INFORMATION

PREPARATION FOR REMOVAL

1. Remove all dirt, mud, dust, and foreign material before removal and disassembly.

2. Use proper tools and cleaning equipment. Refer to "SPECIAL TOOL".

3. When disassembling the machine, keep mated parts together. This includes gears, cylinders, pistons, and other mated parts that have been "mated" through normal wear. Mated parts must be reused as an assembly or replaced.

4. During the machines disassembly, clean all parts and place them in trays in the order of disassembly. This will speed up assembly time and help assure that all parts are correctly reinstalled.

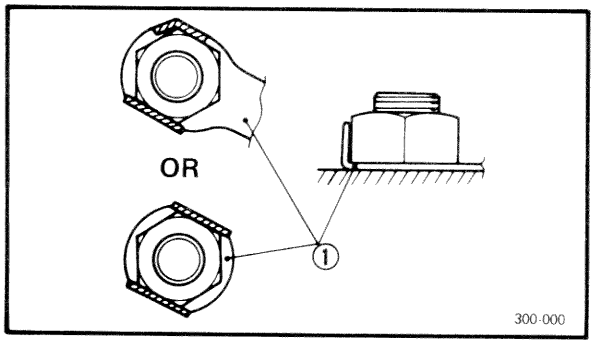
ALL REPLACEMENT PARTS

1. We recommended to use Yamaha genuine parts for all replacements. Use oil and/or grease recommended by Yamaha for assembly and adjustment. Other brands may be similar in function and appearance, but inferior in quality.

GASKETS, OIL SEALS, AND O-RINGS

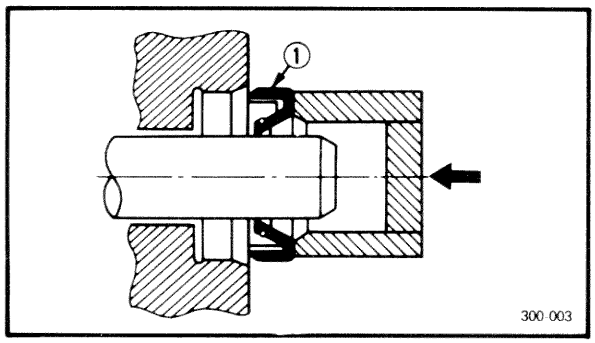
1. All gaskets, seals, and O-rings should be replaced when an engine is overhauled. All gasket surfaces, oil seal lips, and O-rings must be cleaned.

2. Properly oil all mating parts and bearings during reassembly. Apply grease to the oil seal lips.



LOCK WASHERS/PLATES AND COTTER PINS

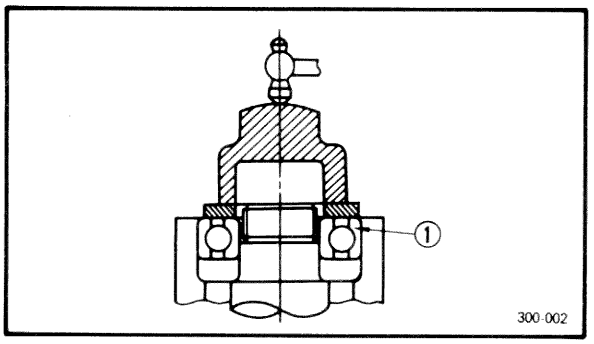
1. All lock washers/plates ① and cotter pins must be replaced when they are removed. Lock tab(s) should be bent along the bolt or nut flat(s) after the bolt or nut has been properly tightened.



BEARINGS AND OIL SEALS

1. Install the bearing(s) and oil seal(s) with their manufacturer's marks or numbers facing outward. (In other words, the stamped letters must be on the side exposed to view.) When installing oil seal(s), apply a light coating of light-weight lithium base grease to the seal lip(s). Oil the bearings liberally when installing.

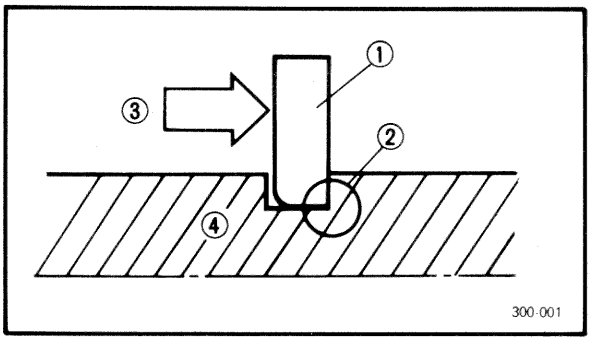
① Oil seal



⚠ CAUTION:

Do not use compressed air to spin the bearings dry. This causes damage to the bearing surfaces.

① Bearing



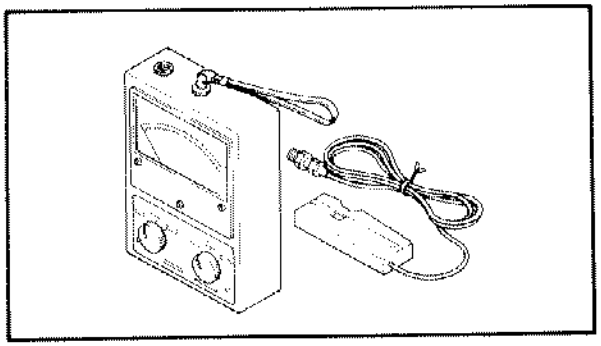
CIRCLIPS

1. All circlips should be inspected carefully before reassembly. Always replace piston pin clips after one use. Replace distorted circlips. When installing a circlip ① , make sure that the sharp edged corner ② is positioned opposite to the thrust ③ it receives. See the sectional view.

④ Shaft

SPECIAL TOOLS

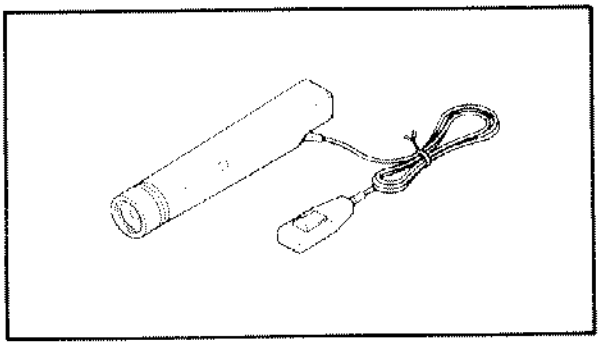
The proper special tools are necessary for complete and accurate tune-up and assembly. Using the correct special tool will help prevent damage caused by the use of improper tools or improvised techniques.



FOR TUNE UP

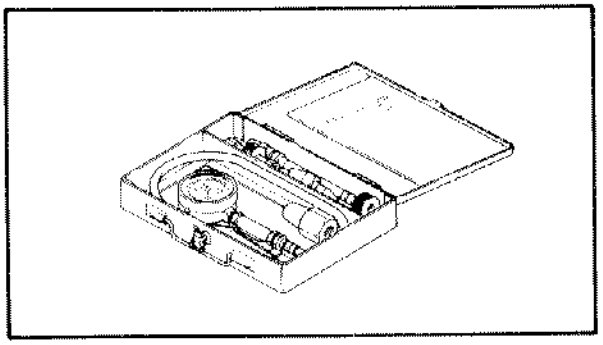
1. Inductive Tachometer
   P/N YU-08036
   90890-03113

This tool is needed for detecting engine rpm.



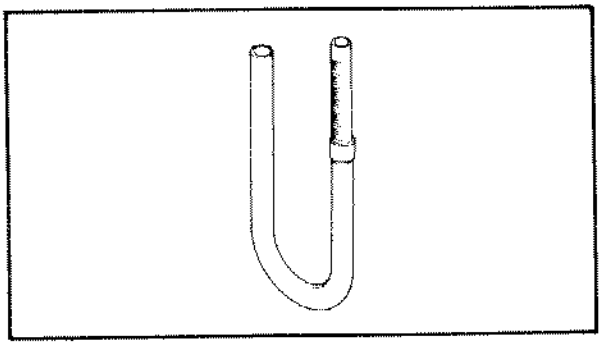
2. Inductive Timing Light
   P/N YM-33277 – A
   90890-03109

This tool is necessary for checking ignition timing.



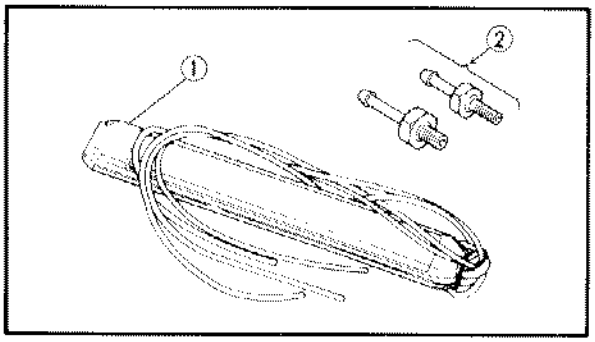
3. Compression Gauge
   P/N YU-33223
   90890-03081

This gauge is used to measure the engine compression.



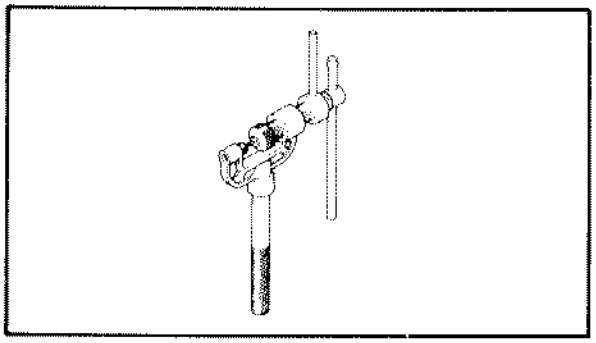
4. Fuel Level Gauge
   P/N YM-01312
   90890-01312

This gauge is used to measure the fuel level in the float chamber.



5. Vaccum Gauge ①
   Adapter ②
   P/N YU-08030 – A
   90890-03094
   P/N 90890-03060

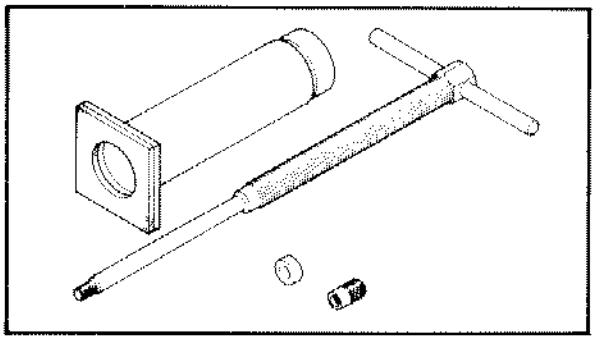
This gauge is needed for carburetor synchronization.



FOR ENGINE SERVICE

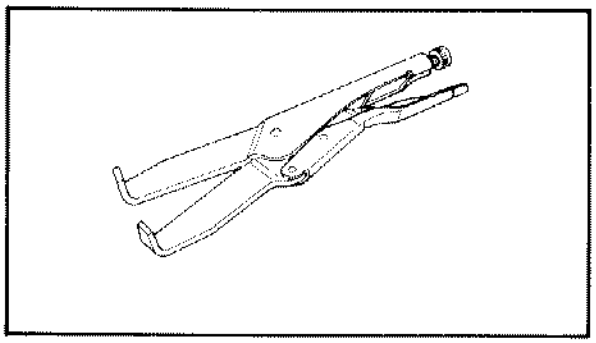
1. Cam Chain Cutter
   P/N YM-01112
   90890 01112

This tool is used when cutting the cam chain.



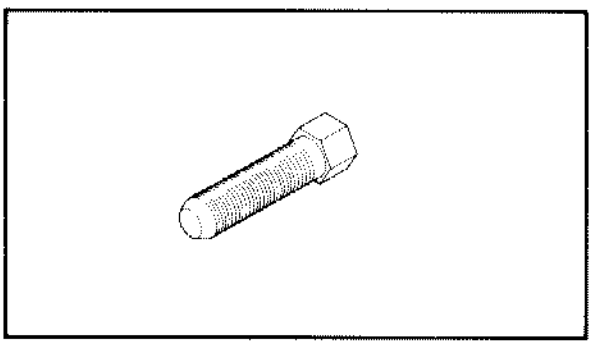
2. Piston Pin Puller
   P/N YU-01304
   90890 01304

This tool is used to loosen or tighten the cylinder head securing nut.



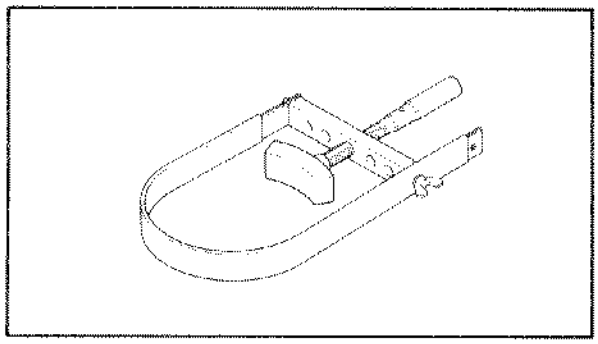
3. Universal Clutch Holder
   P/N YM-91042
   90890-04086

This tool is used to remove the piston pin.

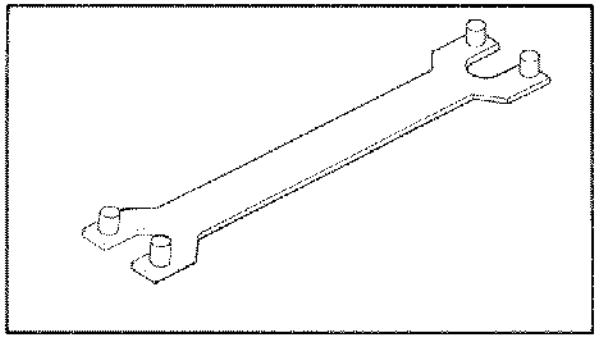


4. Rotor Puller
   P/N YM-01080
   90890-01080

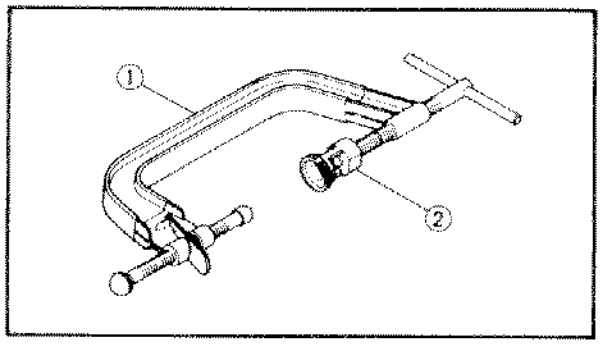
This tool is used to remove the rotor.



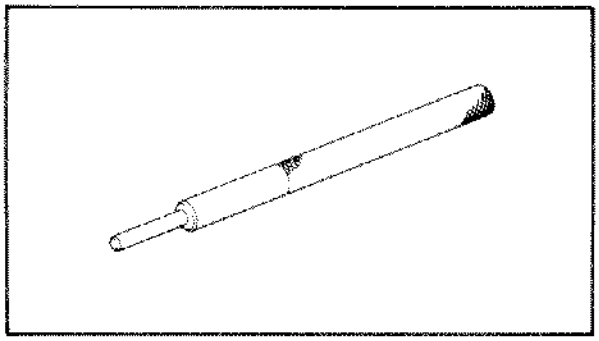
5. Universal Rotor Holder
P/N YS-01880
90890-01701
This tool is used to loosen and tighten the A.C. magneto.



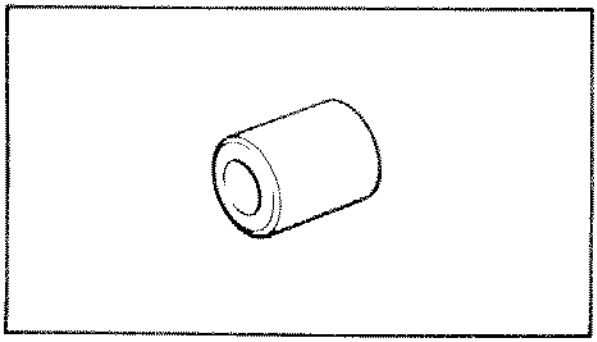
6. Camshaft Wrench
P/N YM-04115
90890-04115
This tool is used to turn the crankshaft.



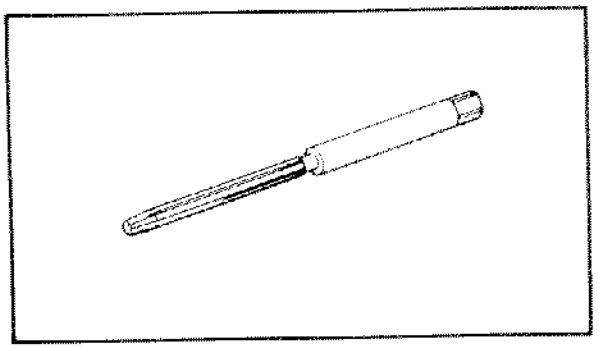
7. Valve Spring Compressor ①
P/N YM-04019
90890-04019
Attachment ②
P/N YM-04108
90890-04108
This tool is needed to remove and install the valve assemblies.



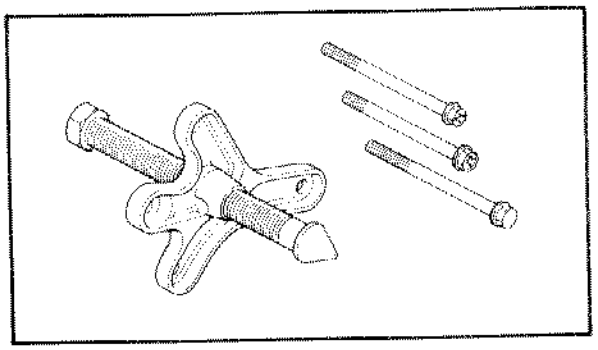
8. Valve Guide Remover (4.5 mm)
P/N YM-04116
90890-04116
This tool is used to remove the valve guides.



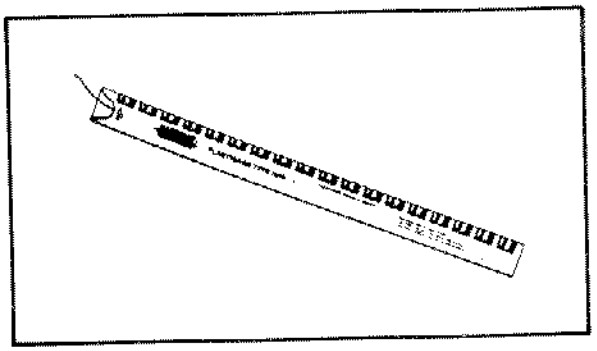
9. Valve Guide Installer
P/N YM-04117
90890-04117
This tool is needed to install the valve guides properly.



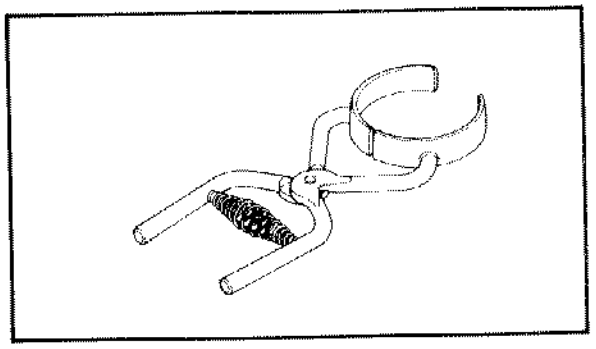
10. Valve Guide Reamer (4.5 mm)
P/N YM-04118
90890-04118
This tool is used to rebore the new valve guide.



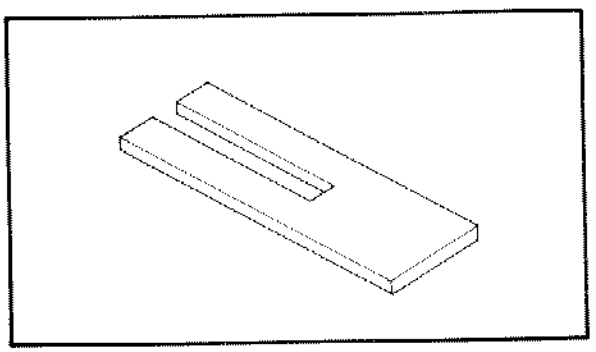
11. Flywheel Puller Set
P/N YU-33270
90890-01362
This tool is used to loosen or tighten the main axle bearing retainer bolt.



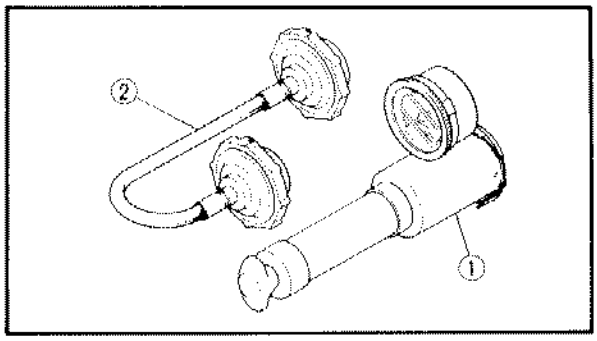
12. Plastigage® Set "Green"
P/N YU-33210
This gauge is needed to measure the clearance for the connecting rod bearing and the crank shaft bearing.



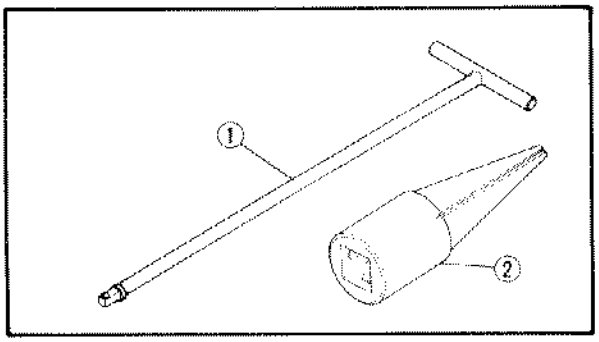
13. Piston Ring Compressor
P/N YM-8037
90890-04048
This tool is used to compress piston rings when installing the cylinder.



14. Piston Base
P/N YM-01067
90890-01067
Use four pieces of these to hold the pistons during cylinder installation.

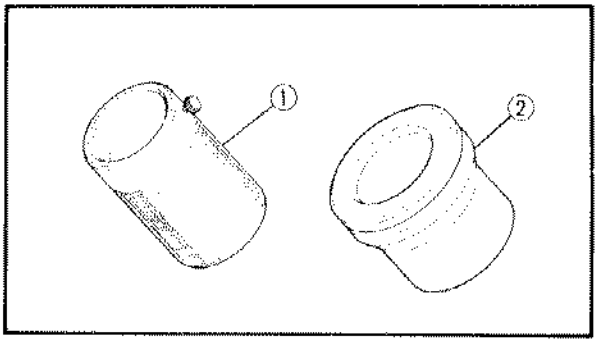


15. Radiator Cap Tester ①
P/N YU-24460-01
P/N 90890-01325
Adapter ②
P/N YU-33984
P/N 90890-01352
This tester is needed for checking the cooling system.

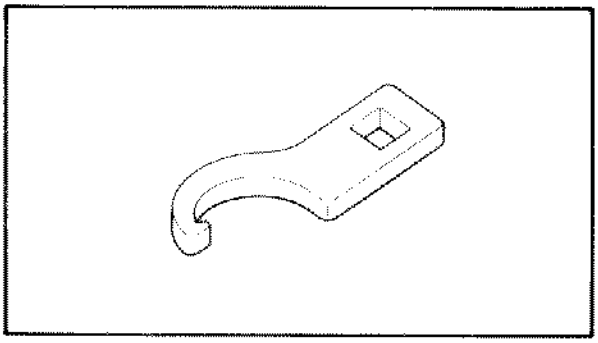


FOR CHASSIS SERVICE

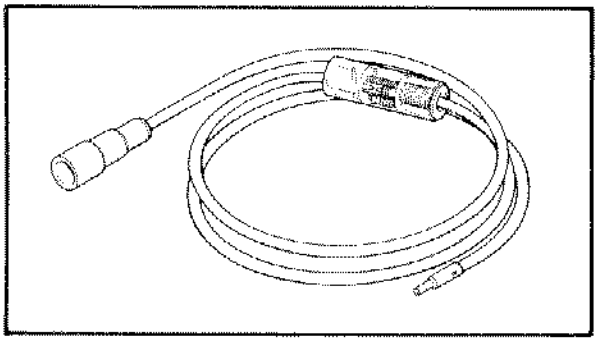
1. T Handle ①
P/N YM-01326
90890-01326
Fork Damper Rod Holder ②
P/N YM-01300-01
90890-01294
This tool is used to loosen and tighten the front fork damper rod holding bolt.



2. Front Fork Seal Driver (weight) ①
P/N YM-33963
90890-01367
Adapter (38 mm) ②
P/N YM-1372
90890-01372
These tools are used when installing the fork seat.

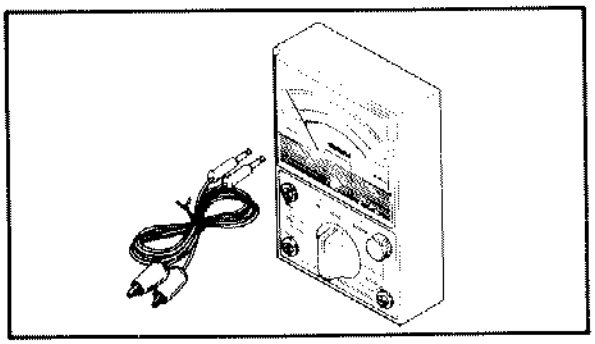


3. Ring Nut Wrench
P/N YU-33975
90890 01403
This tool is used to loosen and tighten the steering ring nut.



FOR ELECTRICAL COMPONENTS

1. Dynamic Coil Tester
P/N YM-34487
90890-03144
This instrument is necessary for checking the ignition system components.

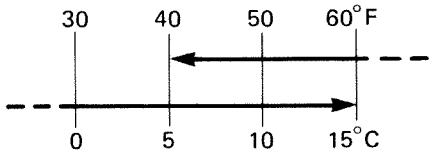


2. Pocket Tester
   P/N YU 03112
   90890-03112

This instrument is invaluable for checking the electrical system.

SPECIFICATIONS

GENERAL SPECIFICATIONS

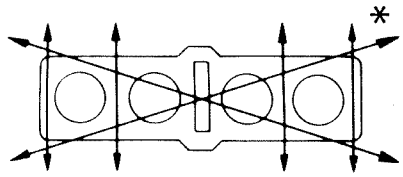
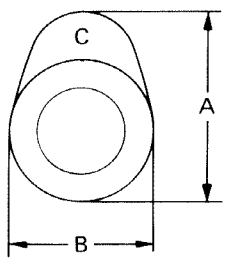
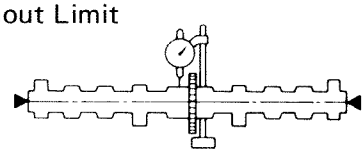
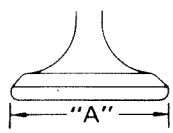
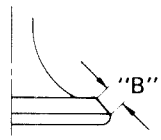
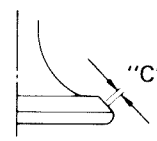
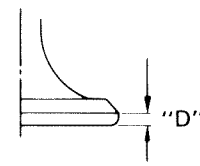
Model	FZR600W/WC	
	FZR600W	FZR600WC
Model Code Number	3HH1	3HW1
Vehicle Identification Number	JYA3HHE0*KA000101	JYA3HWC0*KA000101
Engine Starting Number	3HH-000101	3HW-000101
Dimensions: Overall Length Overall Width Overall Height Seat Height Wheelbase Minimum Ground Clearance	 2,095 mm (82.5 in) 700 mm (27.6 in) 1,160 mm (45.7 in) 785 mm (30.9 in) 1,420 mm (55.9 in) 135 mm (5.3 in)	
Basic Weight: With Oil and Full Fuel Tank	199 kg (439 lb), 204 kg (450 lb) (FZR600WC)	
Minimum Turning Radius:	3,500 mm (138 in)	
Engine: Engine Type Cylinder Arrangement Displacement Bore x Stroke Compression Ratio Compression Pressure Starting System	 Liquid cooled 4-stroke, gasoline, DOHC 4-cylinder parallel 599 cm^3 59.0 x 54.8 mm (2.323 x 2.158 in) 12 : 1 1,200 kPa (12 kg/cm^2, 171 psi) Electric starter	
Lubrication System:	Wet sump	
Engine Oil Type or Grade: 	 YAMALUBE 4 (20W40) or SAE 20W40 type SE motor oil YAMALUBE 4 (10W30) or SAE 10W30 type SE motor oil	
Engine Oil Capacity: Engine Oil: Periodic Oil Change: With Oil Filter Replacement Total Amount	 2.2 L (1.9 Imp qt, 2.4 US qt) 2.5 L (2.2 Imp qt, 2.7 US qt) 3.0 L (2.6 Imp qt, 3.2 US qt)	
Coolant Total Amount: (Including All Routes)	2.2 L (1.9 Imp qt, 2.3 US qt)	
Air Filter:	Dry type element	
Fuel: Type Tank capacity Reserve Amount	 UNLEADED FUEL RECOMMENDED 18 L (4.0 Imp gal, 4.8 US gal) 3.4 L (0.75 Imp gal, 0.90 US gal)	

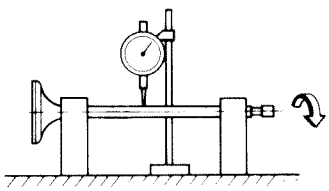
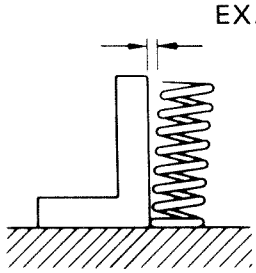
Model	FZR600W/WC	
Carburetor:		
Type x Quantity	BDST32 x 4	
Manufacturer	MIKUNI	
Spark Plug:		
Type (Manufacture)	CR9E (NGK), U27ESR-N (N.D.)	
Gap	0.7 ~ 0.8 mm (0.028 ~ 0.032 in)	
Clutch Type:	Wet, multiple-disc	
Transmission:		
Primary Reduction System	Spur gear	
Primary Reduction Ratio	82/48 (1.708)	
Secondary Reduction System	Chain drive	
Secondary Reduction Ratio	46/15 (3.267)	
Transmission Type	Constant-mesh, 6-speed	
Operation	Left foot operation	
Gear Ratio 1st	42/15 (2.800)	
2nd	43/22 (1.955)	
3rd	31/20 (1.550)	
4th	28/21 (1.333)	
5th	31/26 (1.192)	
6th	30/27 (1.111)	
Chassis:		
Frame Type	Double cradle	
Caster Angle	25°	
Trail	94 mm (3.7 in)	
Tire:	Front	Rear
Type	Tubeless	Tubeless
Size	110/70V17-V240	130/70V18-V240
Manufacture (Type)	Bridgestone (G549) Dunlop (K275F)	Bridgestone (G550) Dunlop (K275)
Maximum Load*	159 kg (351 lb) 154 kg (340 lb) (FZR600WC)	
Tire Pressure (Cold tire):	Front	Rear
Up to 90 kg (198 lb) load*	250 kPa (2.5 kg/cm^2, 36 psi)	250 kPa (2.5 kg/cm^2, 36 psi)
90 kg (198 lb) ~ Maximum load*	250 kPa (2.5 kg/cm^2, 36 psi)	290 kPa (2.9 kg/cm^2, 42 psi)
High speed riding	250 kPa (2.5 kg/cm^2, 36 psi)	290 kPa (2.9 kg/cm^2, 42 psi)
* Load is total weight of cargo, rider, passenger, and accessories.		
Brake:		
Front Brake Type	Dual disc brake	
Operation	Right hand operation	
Rear Brake Type	Single disc brake	
Operation	Right foot operation	
Suspension:		
Front Suspension	Telescopic fork	
Rear Suspension	Swingarm (Link suspension)	

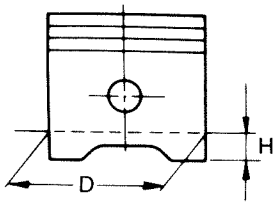
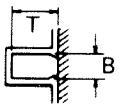
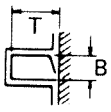
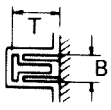
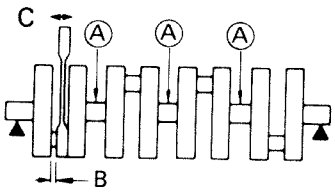
Model	FZR600W/WC
Shock Absorber:	
Front Shock Absorber	Coil-air spring, oil damper
Rear Shock Absorber	Coil-gas spring, gas-oil damper
Wheel Travel:	
Front Wheel Travel	130 mm (5.12 in)
Rear Wheel Travel	115 mm (4.53 in)
Electrical:	
Ignition System	T.C.I. (Digital ignition)
Generator System	A.C. generator
Battery Type or Model	GM12AZ
Battery Capacity	12V12AH
Headlight type:	Quartz bulb
Bulb Wattage x Quantity:	
Headlight	12V 35W/35W x 2
Tail/Brake Light	12V 8W/27W x 2
Flasher Light	12V 27W x 4
Meter Light	12V 1.7W x 5
Indicator Light:	
Wattage x Quantity "NEUTRAL"	12V 3.4W x 1
"NIGH BEAM"	12V 3.4W x 1
"TURN"	12V 3.4W x 1
"OIL LEVEL"	12V 3.4W x 1

MAINTENANCE SPECIFICATIONS

ENGINE

Model	FZR600W/WC
Cylinder Head: Warp Limit* 	0.05 mm (0.002 in) *Lines indicate straightedge measurement
Cylinder: Bore Size Taper Limit Out of Round Limit	 59.00 ~ 59.01 mm (2.3228 ~ 2.3232 in) 0.09 mm (0.004 in) 0.07 mm (0.003 in)
Camshaft: Drive Method Cam Cap Inside Dia. Camshaft Outside Dia. Shaft-to-Cap Clearance < Limit > Cam Dimensions: Intake "A" < Limit > "B" < Limit >  Exhaust "A" < Limit > "B" < Limit > Camshaft Runout Limit 	 Chain drive (Center) 23.000 ~ 23.021 mm (0.9055 ~ 0.9063 in) 22.967 ~ 22.980 mm (0.9042 ~ 0.9047 in) 0.020 ~ 0.054 mm (0.0008 ~ 0.0021 in) 0.08 mm (0.0031 in) 32.75 ~ 32.85 mm (1.2894 ~ 1.2933 in) 32.7 mm (1.2799 in) 24.998 ~ 25.098 mm (0.9842 ~ 0.9881 in) 24.95 mm (0.982 in) 32.55 ~ 32.65 mm (1.2815 ~ 1.2854 in) 32.5 mm (1.280 in) 24.998 ~ 25.098 mm (0.9842 ~ 0.9881 in) 24.95 mm (0.982 in) 0.06 mm (0.0024 in)
Cam Chain: Cam Chain Type/No. of Links Cam Chain Adjustment Method Valve, Valve Seat, Valve Guide: Valve Clearance (Cold): IN. EX. Valve Dimensions:  Head Dia.  Face Width  Seat Width  Margin Tickness	 DID215F/118 Links Automatic 0.11 ~ 0.20 mm (0.004 ~ 0.008 in) 0.21 ~ 0.30 mm (0.008 ~ 0.012 in)

Model		FZR600W/WC
"A" Head Dia.	IN.	23.9 ~ 24.1 mm (0.941 ~ 0.949 in)
	EX.	20.9 ~ 21.1 mm (0.823 ~ 0.831 in)
"B" Face Width	IN.	1.56 ~ 2.40 mm (0.061 ~ 0.095 in)
	EX.	1.56 ~ 2.40 mm (0.061 ~ 0.095 in)
"C" Seat Width	IN.	0.9 ~ 1.1 mm (0.0354 ~ 0.0433 in)
	EX.	0.9 ~ 1.1 mm (0.0354 ~ 0.0433 in)
< Limit >	IN.	1.6 mm (0.063 in)
	EX.	1.6 mm (0.063 in)
"D" Margin Thckness	IN.	0.6 ~ 0.8 mm (0.0236 ~ 0.0315 in)
	EX.	0.6 ~ 0.8 mm (0.0236 ~ 0.0315 in)
< Limit >	IN.	0.5 mm (0.020 in)
	EX.	0.5 mm (0.020 in)
Stem Outside Diameter	IN.	4.475 ~ 4.490 mm (0.1762 ~ 0.1768 in)
	EX.	4.460 ~ 4.475 mm (0.1756 ~ 0.1762 in)
< Limit >	IN.	4.45 mm (0.1752 in)
	EX.	4.435 mm (0.1746 in)
Guide Inside Diameter	IN.	4.500 ~ 4.512 mm (0.1772 ~ 0.1776 in)
	EX.	4.500 ~.4.512 mm (0.1772 ~ 0.1776 in)
< Limit >	IN.	4.542 mm (0.179 in)
	EX.	4.542 mm (0.179 in)
Stem-to-Guide Clearance	IN.	0.010 ~ 0.037 mm (0.0004 ~ 0.0015 in)
	EX.	0.025 ~ 0.052 mm (0.001 ~ 0.002 in)
< Limit >	IN.	0.08 mm (0.0031 in)
	EX.	0.1 mm (0.0039 in)
Stem Runout Limit		0.04 mm (0.002 in)
		
Valve Seat Width	IN.	0.9 ~ 1.1 mm (0.0354 ~ 0.0433 in)
	EX.	0.9 ~ 1.1 mm (0.0354 ~ 0.0433 in)
< Limit >	IN.	1.6 mm (0.063 in)
	EX.	1.6 mm (0.063 in)
Valve Spring:		
Free Length	IN.	43.15 mm (1.70 in)
	EX.	43.15 mm (1.70 in)
Installed Length (Valve Closed)	IN.	37.5 mm (1.48 in)
	EX.	37.5 mm (1.48 in)
Compressed Pressure	IN.	11.6 ~ 13.4 kg (25.9 ~ 29.6 lb)
(Valve closed)	EX.	11.6 ~ 13.4 kg (25.9 ~ 29.6 lb)
< Limit >	IN.	10.4 kg (22.1 lb)
	EX.	10.4 kg (22.1 lb)
Tilt Limit	IN.	2.5°/1.8 mm (0.0709 in)
	EX.	2.5°/1.8 mm (0.0709 in)
		
Direction of Winding (Top view)	IN.	
	EX.	

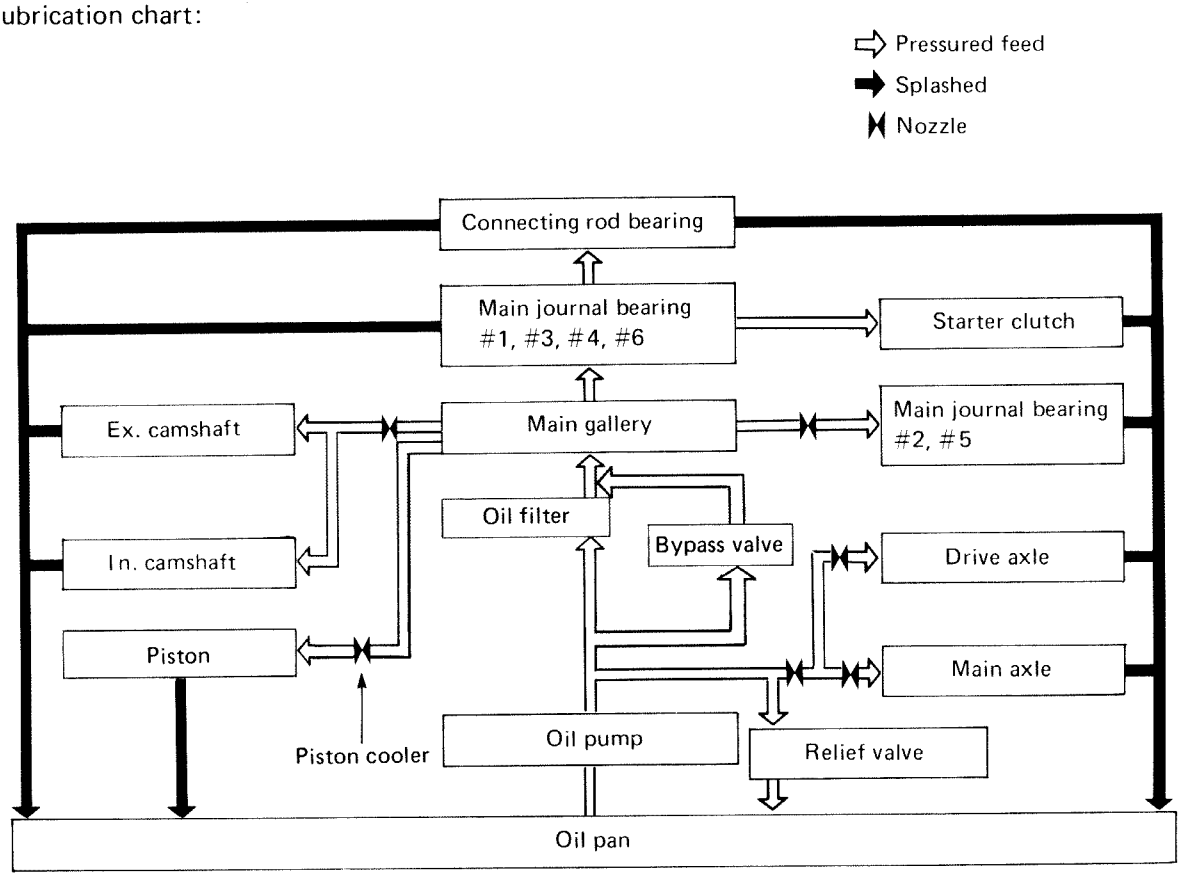
Model		FZR600W/WC
Piston:		
Piston Size "D"		58.940 ~ 58.955 mm (2.321 ~ 2.322 in)
Measuring Point "H"		5 mm (0.197 in) (From bottom line of piston skirt)
Piston-to-Cylinder Clearance		0.045 ~ 0.070 mm (0.0018 ~ 0.0028 in)
< Limit >		< 0.15 mm (0.006 in) >
Oversize:	2nd	59.5 mm (2.343 in)
	4th	60.0 mm (2.362 in)
Piston Ring:		
Sectional Sketch	 Top Ring	Barrel B = 0.8 mm (0.0315 in) T = 2.1 mm (0.0827 in)
	 2nd Ring	Taper B = 0.8 mm (0.0315 in) T = 2.1 mm (0.0827 in)
	 Oil Ring	Expander B = 1.5 mm (0.0591 in) T = 2.2 mm (0.0866 in)
End Gap (Installed):	Top Ring	0.15 ~ 0.30 mm (0.0059 ~ 0.0118 in)
	2nd Ring	0.15 ~ 0.30 mm (0.0059 ~ 0.0118 in)
	Oil Ring	0.2 ~ 0.6 mm (0.0079 ~ 0.0236 in)
Side Clearance:	Top Ring	0.03 ~ 0.07 mm (0.0012 ~ 0.0028 in)
	< Limit >	0.10 mm (0.004 in)
	2nd Ring	0.02 ~ 0.06 mm (0.0008 ~ 0.0024 in)
	< Limit >	0.10 mm (0.004 in)
	Oil Ring	–
Connecting Rod:		
Connecting Rod Oil Clearance		0.043 ~ 0.066 mm (0.0017 ~ 0.0026 in)
Bearing Size No. Color Code		1. Blue 2. Black 3. Brown 4. Green
Crankshaft:		
Runout Limit "A"		0.03 mm (0.0012 in)
Big End Side Clearance "B"		0.160 ~ 0.262 mm (0.0063 ~ 0.0103 in)
Small End Free Play "C"		0.32 ~ 0.50 mm (0.0126 ~ 0.0197 in))

Model		FZR600W/WC	
Main Journal Oil Clearance		0.025 ~ 0.043 mm (0.0010 ~ 0.0017 in)	
Bearing Size No. Color Code		1. Blue 2. Black 3. Brown 4. Green 5. Yellow	
Clutch:			
Friction Plate Thickness x Quantity		2.9 ~ 3.1 mm (0.114 ~ 0.122 in) x 9	
Wear Limit		2.8 mm (0.11 in)	
Clutch Plate Thickness x Quantity		1.8 ~ 2.2 mm (0.072 ~ 0.085 in) x 8	
Warp Limit		0.1 mm (0.04 in)	
Clutch Spring Free Length x Quantity		33.5 mm (1.32 in) x 5	
Clutch Spring Minimum Length		32.6 mm (1.28 in)	
Clutch Housing Thrust Clearance		0.05 ~ 0.13 mm (0.002 ~ 0.005 in)	
Clutch Release Method		Inner push, screw push	
Push Rod Bending Limit		0.5 mm (0.020 in)	
Transmission:			
Main Axle Deflection Limit		0.08 mm (0.0031 in)	
Drive Axle Deflection Limit		0.08 mm (0.0031 in)	
Shifter:			
Shifter Type		Cam Drum	
Carburetor:		FZR600W	FZR600WC
Type/Manufacture x Quantity		BDST32/MIKUNI x 4	←
I.D. Mark		3HH-00	3HW00
Main Jet	(M.J.)	#107.5	←
Main Air Jet	(M.A.J.)	#65	←
Jet Needle-Clip Position	(J.N.)	5CFZ4-2	5CFZ7-1
Needle Jet	(N.J.)	Y-0	←
Pilot Jet	(P.J.)	#32.5	←
Pilot Outlet Size	(P.O.)	0.8	←
Pilot Air Jet	(P.A.J.)	#132.5	←
Pilot Screw	(P.S.)	3.0	←
Valve Seat Size	(V.S.)	1.2	←
Starter Jet	($G.S_1$)	#52.5	#50
	($G.S_2$)	0.6	0.5
Bypass 1	(B.P. 1)	0.8	←
Bypass 2	(B.P. 2)	0.8	←
Throttle Valve Size	(Th. V)	#130	←
Fuel Level	(F.L.)	3.8 ~ 4.8 mm (0.15 ~ 0.19 in) From the float chamber line	
Lubrication System:			
Oil Filter Type		Paper	
Oil Pump Type		Trochoid pump	
Tip Clearance		0.03 ~ 0.09 mm (0.0012 ~ 0.0035 in)	
< Limit >		< 0.15 mm (0.006 in) >	
Side Clearance		0.03 ~ 0.08 mm (0.0012 ~ 0.0031 in)	
< Limit >		< 0.15 mm (0.006 in) >	
Bypass Valve Setting Pressure		80 ~ 120 kPa (0.8 ~ 1.2 kg/cm², 11.38 ~ 17.06 psi)	
Relief Valve Operating Pressure		450 ~ 550 kPa (4.5 ~ 5.5 kg/cm², 63.99 ~ 78.21 psi)	

Model	FZR600W/WC
Cooling System:	
Radiator Core Size Width	350 mm (13.8 in)
Height	185 mm (7.3 in)
Thickness	32 mm (1.26 in)
Radiator Cap Opening Pressure	95 ~ 125 kPa (0.95 ~ 1.25 kg/cm^2, 13.5 ~ 17.8 psi)
Reservoir Tank Capacity <To Full level>	0.28 L (0.25 Imp qt, 0.30 US qt)
Water Pump	
Type	Single-suction centrifugal pump
Reduction Ratio	89/41 x 48/49 (2.126)

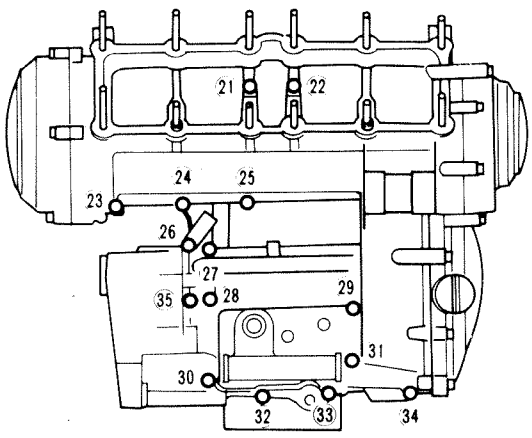
Model	FZR600W/WC

Lubrication chart:

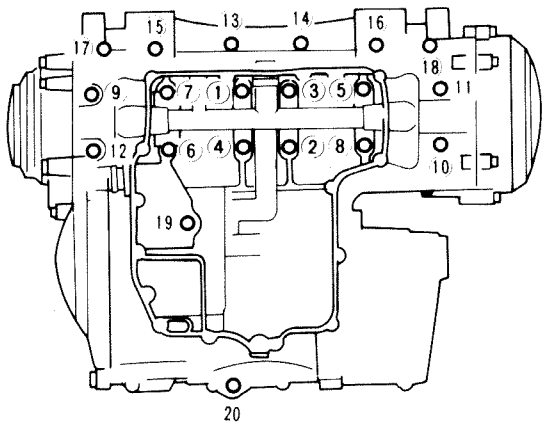


Crankcase Tightening Sequence:

Crankcase (Upper)



Crankcase (Lower)



① ~ ⑫ , ⑳ 8 mm Bolt: 24 Nm (2.4 m·kg, 17 ft·lb)
⑬ ~ ㉙ , ㉛ ~ ㉟ 6 mm Bolt: 12 Nm (1.2 m·kg, 8.7 ft·lb)

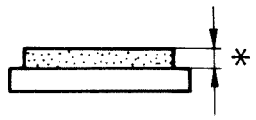
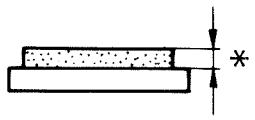
Tightening torque

Part to be tightened	Part name	Thread size	Q'ty	Tightening torque			Remarks
				Nm	m·kg	ft·lb	
Camshaft Cap	Bolt	M6	24	10	1.0	7.2	LT
Stud Bolt (Cylinder head)	—	M6	8	10	1.0	7.2	
Cylinder Head	Nut	M8	12	25	2.5	18	E
Spark Plug	—	M10	4	13	1.3	9.4	
Cylinder Head Cover	Bolt	M6	8	10	1.0	7.2	
Blind Plug (Sand)	Screw	M12	6	37	3.7	27	LT
Blind Plug (Water)	Screw	M6	3	7	0.7	5.1	
Connecting Rod	Nut	M7	8	23	2.3	17	M
Timing Chain Sprocket	Bolt	M7	4	24	2.4	17	
Timing Chain Tensioner	Bolt	M6	2	10	1.0	7.2	
Timing Chain Guide (Intake)	Bolt	M6	2	10	1.0	7.2	LT
Timing Chain Tensioner End	Bolt	M6	1	10	1.0	7.2	
Pipe Stopper	Bolt	M6	6	10	1.0	7.2	
Thermostat Housing Assembly	Bolt	M6	1	7	0.7	5.1	
Thermostat Housing Cover	Bolt	M6	2	10	1.0	7.2	
Radiator	Bolt	M6	2	10	1.0	7.2	
Water Pipe Joint	Bolt	M6	4	10	1.0	7.2	
Water Pump	Bolt	M6	2	10	1.0	7.2	
Water Pump Cover	Bolt	M6	2	10	1.0	7.2	
Radiator Cover	Screw	M5	4	7	0.7	5.1	
Oil Pump Housing	Screw	M6	1	7	0.7	5.1	
Oil Pump Mount	Bolt	M6	3	10	1.0	7.2	LT
Drain Plug	Bolt	M14	1	43	4.3	31	
Oil Delivery Pipe	Bolt	M10	2	20	2.0	14	
Carburetor Joint	Bolt	M6	8	10	1.0	7.2	
Exhaust Pipe	Nut	M6	8	10	1.0	7.2	
Muffler Bracket	Bolt	M8	1	20	2.0	14	
Exhaust Pipe Blind Plug (CO test)	Bolt	M6	4	10	1.0	7.2	
Exhaust Pipe Joint	Bolt	M8	2	20	2.0	14	
Crankcase	Bolt	M8	12	24	2.4	17	E
Stud Bolt (Crankcase)	—	M8	13	12	1.2	9.4	E
Crankcase	Bolt	M6	21	12	1.2	8.7	E
Oil Baffle Plate	Screw	M6	4	7	0.7	5.1	
Crankcase Cover (Left)	Bolt	M6	5	10	1.0	7.2	
Crankcase Cover (Right)	Bolt	M6	10	10	1.0	7.2	
Bearing Plate	Bolt	M6	2	10	1.0	7.2	LT
Generator Cover	Bolt	M6	5	10	1.0	7.2	
Starter Clutch Cover	Bolt	M6	7	10	1.0	7.2	
Starter Clutch	Bolt	M10	1	80	8.0	58	
Starter Clutch Outer and Starter Wheel	Bolt	M8	3	30	3.0	22	LT
Pressure Plate	Bolt	M5	5	6	0.6	4.3	
Clutch Boss	Nut	M18	1	70	7.0	51	Use lock washer
Push Lever	Screw	M5	2	5	0.5	3.6	LT
Push Rod	Nut	M6	1	16	1.6	11	
Drive Sprocket	Nut	M18	1	70	7.0	51	Use lock washer
Stopper Plate	Bolt	M6	1	10	1.0	7.2	LT
Stopper Lever	Bolt	M6	1	10	1.0	7.2	LT

Part to be tightened	Part name	Thread size	Q'ty	Tightening torque			Remarks
				Nm	m · kg	ft · lb	
A.C. Magneto	Bolt	M10	1	80	8.0	58	LT
Starter Coil	Bolt	M6	3	10	1.0	7.2	
Pickup Coil	Screw	M5	2	5	0.5	3.6	
Starter Motor	Bolt	M6	2	10	1.0	7.2	
Neutral Switch	Screw	M6	2	4	0.4	2.9	
Oil Level Switch	Bolt	M6	2	7	0.7	5.1	
Ignition Coil	Nut	M6	2	7	0.7	5.1	

CHASSIS

Model		FZR600W/WC
Steering System:		
Steering Bearing Type		Taper Roller Bearing
Front Suspension:		
Front Fork Travel		130 mm (5.12 in)
Front Spring Free Length		415 mm (16.3 in)
< Limit >		410 mm (16.1 in)
Collar Length		160 mm (6.3 in)
Spring Rate:	K1	4.4 N/mm (0.45 kg/mm, 25.2 lb/in)
	K2	7.9 N/mm (0.8 kg/mm, 44.8 lb/in)
Stroke	K1	0.0 ~ 90 mm (0.0 ~ 3.54 in)
	K2	90 ~ 130 mm (3.54 ~ 5.12 in)
Optional Spring		No
Oil Capacity		435 cm^3 (15.3 Imp oz, 15.3 US oz)
Oil Level (Fully Compression)		101 mm (3.98 in) Bellow the top of inner fork tube without fork spring
Oil Grade		Fork Oil 10W or equivalent
Rear Suspension:		
Shock Absorber Travel		43 mm (1.69 in)
Spring Free Length		180.5 mm (7.11 in)
< Limit >		170.5 mm (6.71 in)
Fitting Length		170 mm (6.69 in)
Spring Rate	K1	130 N/mm (13 kg/mm, 728 lb/in)
Stroke	K1	0 ~ 43 mm (0.0 ~ 1.69 in)
Optional Spring		No
		Hard / STD / Soft
		Adjusting position: 7 6 5 4 3 2 1
Swingarm:		
Free Play Limit	End	1.0 mm (0.04 in)
	Side	1.0 mm (0.04 in)
Front Wheel:		
Type		Cast Wheel
Rim Size		MT3.00 x 17
Rim Material		Aluminum
Rim Runout Limit	Radial	2.0 mm (0.08 in)
	Lateral	2.0 mm (0.08 in)
Rear Wheel:		
Type		Cast wheel
Rim Size		MT3.50 x 18
Rim Material		Aluminum
Rim Runout Limit	Radial	2.0 mm (0.08 in)
	Lateral	2.0 mm (0.08 in)
Drive Chain:		
Type/Manufacturer		50VA6/DAIDO
No. of Links		106
Chain Free Play		20 ~ 30 mm (0.8 ~ 1.2 in)

Model	FZR600W/WC
Front Disc Brake:	
Type	Dual
Disc Outside Diameter x Thickness	298 x 4 mm (11.7 x 0.16 in)
< Disc Wear Limit >	3.5 mm (0.14 in)
Pad Thickness Inner	4.5 mm (0.18 in)
< Limit >*	0.5 mm (0.02 in)
Pad Thickness Outer	4.5 mm (0.18 in)
< Limit >*	0.5 mm (0.02 in)
	
Master Cylinder Inside Diameter	15.87 mm (0.62 in)
Caliper Cylinder Inside Diameter:	45.4 mm (1.79 in)
Brake Fluid Type	DOT # 4
Rear Disc Brake:	
Type	Single
Disc Outside Diameter x Thickness	245 x 5 mm (9.65 x 0.20 in)
< Disc Wear Limit >	4.5 mm (0.18 in)
Pad Thickness Inner	5.5 mm (0.22 in)
< Limit >*	0.5 mm (0.02 in)
Pad Thickness Outer	5.5 mm (0.22 in)
< Limit >*	0.5 mm (0.02 in)
	
Master Cylinder Inside Diameter	14.0 mm (0.55 in)
Caliper Cylinder Inside Diameter	42.85 mm (1.69 in)
Brake Fluid Type	DOT # 4 If DOT # 4 is not available, # 3 can be used.
Clutch Lever:	
Clutch Lever Free Play	2 ~ 3 mm (0.08 ~ 0.12 in)
Brake Lever and Brake Pedal:	
Brake Lever Free Play	2 ~ 5 mm (0.08 ~ 0.20 in)
Brake Pedal Position	44 mm (1.73 in) Bellow the top of the footrest.

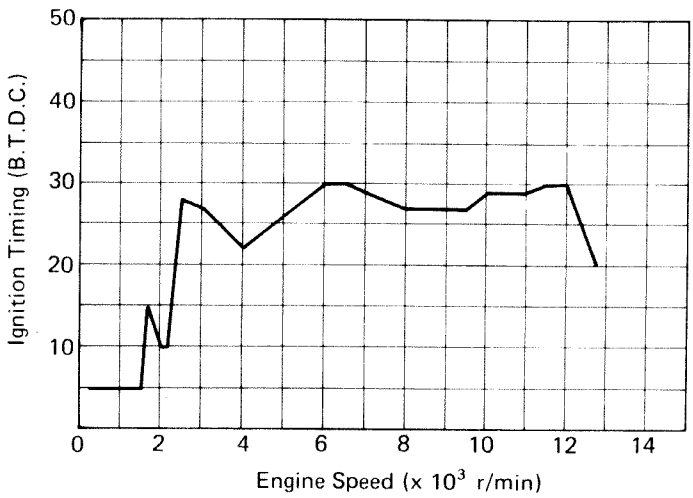
Parts to be tightened	Thread size	Tightening torque		
		Nm	m·kg	ft·lb
Front Axle and Outer Tube	M14 x 1.5	58	5.8	42
Front Wheel Axle Holder	M8 x 1.25	20	2.0	14
Rear Axle and Nut	M16 x 1.5	107	10.7	77
Handlebar Crown and Inner Tube	M8 x 1.25	26	2.6	19
Handlebar Crown and Steering Stem	M22 x 1.0	110	11.0	80
Steering ring nut (Upper and lower)	—	See "NOTE"		
Brake Caliper (Front/Rear)	M10 x 1.25	35	3.5	25
Bleed Screw and Brake Caliper	M8 x 1.25	6	0.6	4.3
Brake Hose and Union Bolt	M10 x 1.25	26	2.6	19
Front Master Cylinder and Master Cylinder Holder	M6 x 1.0	9	0.9	6.5
Front Master Cylinder and Cylinder Cap	M5 x 0.8	2	0.2	1.4
Front Fender and Outer Tube	M6 x 1.0	6	0.6	4.3
Handlebar Boss and Front Fork	M8 x 1.25	13	1.3	9.5
Handlebar and Handlebar Boss	M8 x 1.25	23	2.3	17
Engine Mounting: Front	M10 x 1.25	55	5.5	40
Rear — Upper	M10 x 1.25	60	6.0	43
Rear — Lower	M10 x 1.25	55	5.5	40
Down Tube and Frame: Front	M10 x 1.25	60	6.0	43
Rear	M8 x 1.25	33	3.3	24
Footrest Bracket and Frame	M8 x 1.25	28	2.8	20
Pivot Axle and Nut	M14 x 1.5	90	9.0	65
Relay Arm and Frame	M10 x 1.25	40	4.0	29
Connecting Rod and Swingarm	M10 x 1.25	40	4.0	29
Connecting Rod and Relay Arm	M10 x 1.25	40	4.0	29
Swingarm and Frame	M10 x 1.25	40	4.0	29
Rear Shock Absorber	M10 x 1.25	40	4.0	29
Footrest and Footrest Bracket	M10 x 1.25	57	5.7	41
Rear Footrest Bracket and Frame	M8 x 1.25	20	2.0	14
Rear Master Cylinder and Rear Arm Bracket	M8 x 1.25	20	2.0	14
Cowling and Stay	M6 x 1.0	4	0.4	2.9
Compression Bar and Brake Caliper Bracket	M8 x 1.25	23	2.3	17
Front Fork Pinch Bolt	M8 x 1.25	20	2.0	14
Sprocket and Clutch Hub	M8 x 1.25	60	6.0	43
Brake Disc and Clutch Hub	M8 x 1.25	20	2.0	14
Inner Tube and Steering Stem	M8 x 1.25	22	2.2	16
Frame and Rear Frame: Upper	M10 x 1.25	64	6.4	46
Lower	M12 x 1.25	88	8.8	64

NOTE:

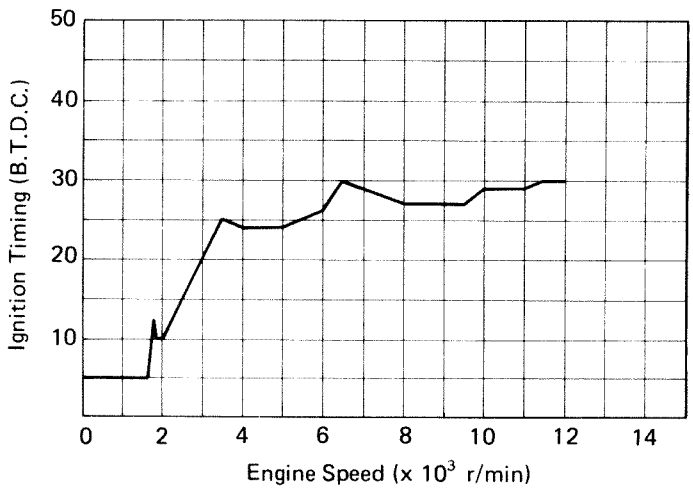
1. First, tighten the ring nut (lower) approximately 52 Nm (5.2 m·kg, 37 ft·lb) by using the torque wrench, then loosen the ring nut one turn.
2. Retighten the ring nut (lower) approximately 3 Nm (0.3 m·kg, 2.2 ft·lb).
3. Install the ring nut (upper). And finger tighten the ring nut (upper), then align the slots of both ring nuts. If not aligned, hold the lower ring nut and tighten the other until they are aligned.

ELECTRICAL

Model	FZR600W/WC
Voltage:	12V
Ignition System:	
Ignition Timing (B.T.D.C.)	5° at 1,200 r/min
Advancer Type	Electrical



(For California)



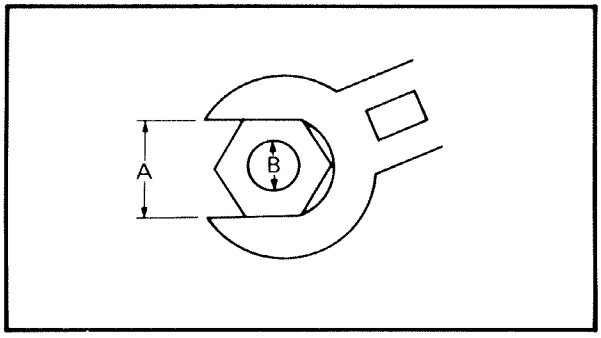
Model	FZR600W/WC
T.C.I.:	
Pickup Coil Resistance	80 ~ 120Ω at 20°C (68°F)
(Color)	(White/Red – White/Black)
T.C.I. Unit/Manufacturer	TID14-73/HITACHI TID14-74/HITACHI (FZR600WC)
Ignition Coil:	
Model/Manufacturer	CM12-39/HITACHI
Minimum Spark Gap	6 mm (0.24 in)
Primary Winding Resistance	1.8 ~ 2.2Ω at 20°C (68°F)
Secondary Winding Resistance	9.6 ~ 14.4 kΩ at 20°C (68°F)
Spark Plug Cap Resistance	10 kΩ
Charging System:	
Type	A.C. Magneto Genrator
A.C. Generator:	
Model/Manufacturer	FL118-15/HITACHI
Nominal Output	12V, 21A at 5,000 r/min
Stator Coil Resistance	0.31 ~ 0.37Ω at 20°C (68°F)
Voltage Regulator:	
Type	Semi conductor – short circuit
Model/Manufacturer	SH569/SHINDENGEN
No Load Regulated Voltage	14.3 ~ 15.3V
Battery:	
Capacity	12V, 12AH
Specific Gravity	1.280

Model	FZR600W/WC
Electrical Starter System:	
Type	Constant mesh type
Starter Motor:	
Model/Manufacturer	SM-13/MITSUBA
Output	0.7 kW
Armature Coil Resistance	0Ω at 20°C (68°F)
Brush – Overall Length	12.5.mm (0.49 in)
< Limit >	4 mm (0.16 in)
Commutator Dia.	28 mm (1.10 in)
Wear Limit	27 mm (1.06 in)
Mica Undercut	0.7 mm (0.027 in)
Starter Switch:	
Model/Manufacturer	A104-128/HITACHI
Amperage Rating	100A
Horn:	
Type/	Plane Type/1 pcs.
Model/Manufacturer	YF-12/NIKKO
Maximum Amperage	1.5A
Flasher Relay (Relay Assembly):	
Type	Semi transistor type
Model/Manufacturer	FX257N/NIPPON DENSO
Self Cancelling Device	Yes
Flasher Frequency	60 ~ 120 cycle/min
Wattage	27W x 2 pcs + 3.4W
Oil Level Switch:	
Model/Manufacturer	1WG/NIPPON DENSO
Starting Circuit Cut-Off Relay:	
Model/Manufacturer	G8R-30Y-B/OMRON
Coil Winding Resistance	203 ~ 248Ω at 20°C (68°F)
Diode	No
Fuel Pump Relay:	
Model/Manufacturer	G8R-30Y-B/OMRON
Coil Winding Resistance	203 ~ 248Ω at 20°C (68°F)
Color Code	Black
Electric Fan:	
Model/Manufacturer	NAAB08/NIPPON DENSO
Thermostat Switch:	
Model/Manufacturer	47X/NIPPON THERMOSTAT
Thermo Unit:	
Model/Manufacturer	11H/NIPPON SEIKI
Circuit Breaker:	
Type	Fuse
Amperage for Individual Circuit x Quantity:	
MAIN	30A x 1
HEADLIGHT	20A x 1
SIGNAL	10A x 1
IGNITION	10A x 1
FAN	10A x 1
RESERVE	10A x 1, 30A x 1, 20A x 1

GENERAL TORQUE SPECIFICATIONS

This chart specifies torque for standard fasteners with standard I.S.O. pitch threads. Torque specifications for special components or assemblies are included in the applicable sections of this book. To avoid warpage, tighten multi-fastener assemblies in a crisscross fashion, in progressive stages, until full torque is reached. Unless otherwise specified, torque specifications call for clean, dry threads. Components should be at room temperature.

A (Nut)	B (Bolt)	General torque specifications		
		Nm	m·kg	ft·lb
10 mm	6 mm	6	0.6	4.3
12 mm	8 mm	15	1.5	11
14 mm	10 mm	30	3.0	22
17 mm	12 mm	55	5.5	40
19 mm	14 mm	85	8.5	61
22 mm	16 mm	130	13.0	94



A: Distance across flats
B: Outside thread diameter

DEFINITION OF UNITS

Unit	Read	Definition	Measure
mm cm	millimeter centimeter	10^{-3} meter 10^{-2} meter	Length Length
kg	kilogram	10^{3} gram	Weight
N	Newton	1 kg x m/sec^2	Force
Nm m·kg	Newton meter Meter kilogram	N x m m x kg	Torque Torque
Pa N/mm	Pascal Newton per millimeter	N/m^2 N/mm	Pressure Spring rate
L cm^3	Liter Cubic centimeter		Volume or Capacity
r/min	Rotation per minute		Engine Speed

LUBRICATION POINT AND GRADE OF LUBRICANT

ENGINE

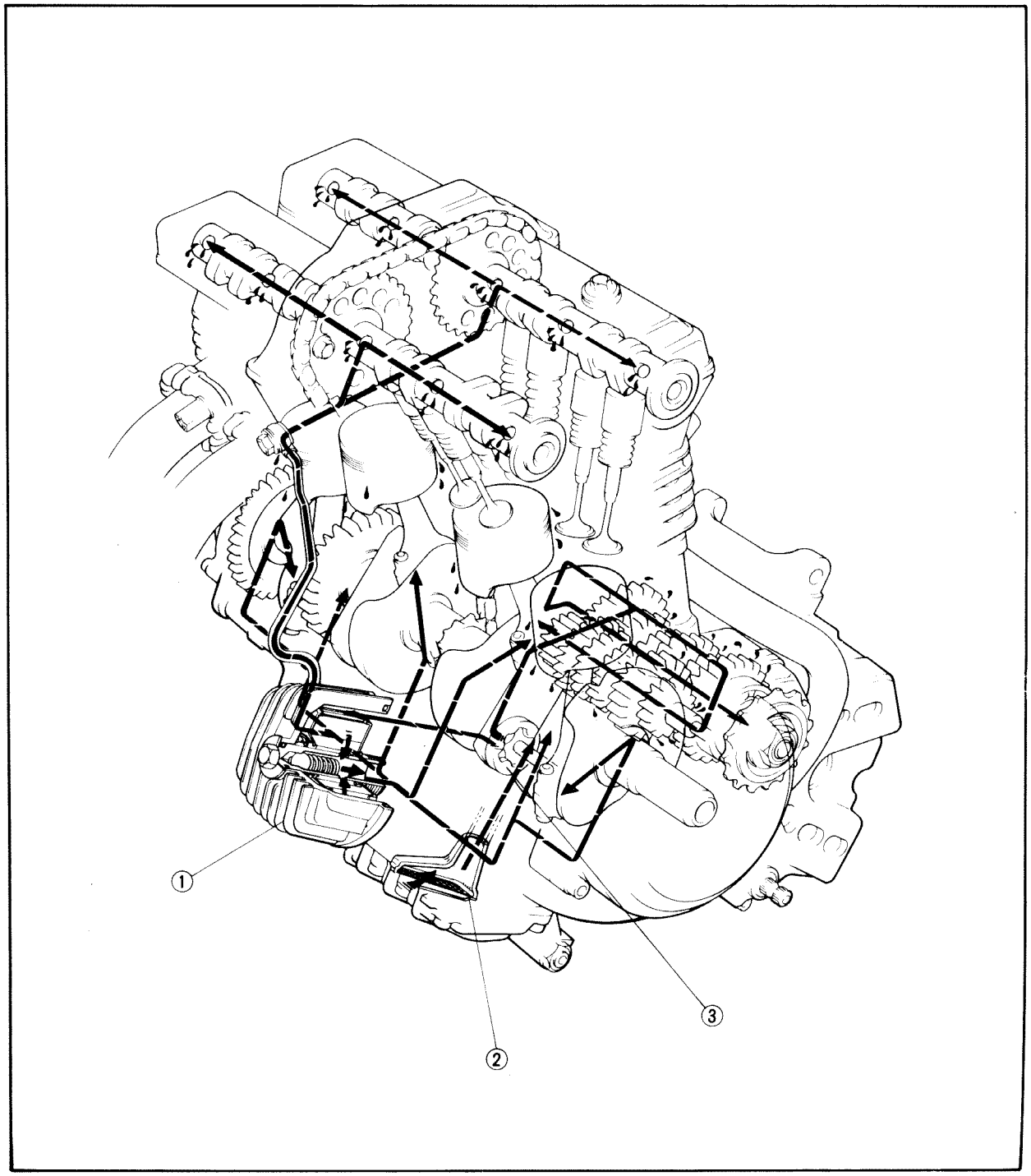
Lubrication Point	Symbol
Oil seal lip	LS
O-Ring	LS
Bearing	E
Piston surface	E
Piston pin	E
Cylinder head bolt	E
Crankshaft pin	E
Crankshaft journal	E
Connecting rod bolt/Nut	M
Camshaft cam lobe/Journal	M
Valve stem (IN, EX)	M
Valve stem end (IN, EX)	E
Valve lifter	E
Water pump impeller shaft	LS
Oil pump rotor (Inner/Outer), housing	E
Oil strainer assembly	E
O-Ring (Release Valve)	LS
Oil Level Gauge	E
Idle gear surface/Bearing	E
O-Ring (Starter Motor)	LS
Starter idle gear	E
Starter idle gear shaft	M
Primary driven gear	E
Transmission gear (Wheel/Pinion)	M
Axe (Main/Drive)	M
Push lever assembly	LS
Push rod	E
Shift cam	E
Shift fork/Guide bar	E
Shift shaft assembly	E
Neutral switch O-Ring	E

CHASSIS

Lubrication Point	Symbol
Steering bearing (Upper/Lower)	LS
Wheel bearing/Axle	LS
Front wheel oil seal (Right/Left)	LS
Rear wheel oil seal	LS
Clutch hub oil seal	LS
Clutch hub fitting area	LS
Rear brake pedal shaft	LS
Change pedal	LS
Side stand sliding surface	LS
Tube guide (Throttle grip) inner surface	LS
Brake lever bolt, sliding surface	LS
Clutch lever bolt, sliding surface	LS
Rear shock absorber (Upper/Lower)	LS
Swingarm pivot bearing	LS
Pivot shaft	LS
Arm bearing	LS
Thrust cover (Inner)	LS
Swingarm bearing (Inner)	LS
Rear footrest pivot	LS
Rear footrest pin	LS

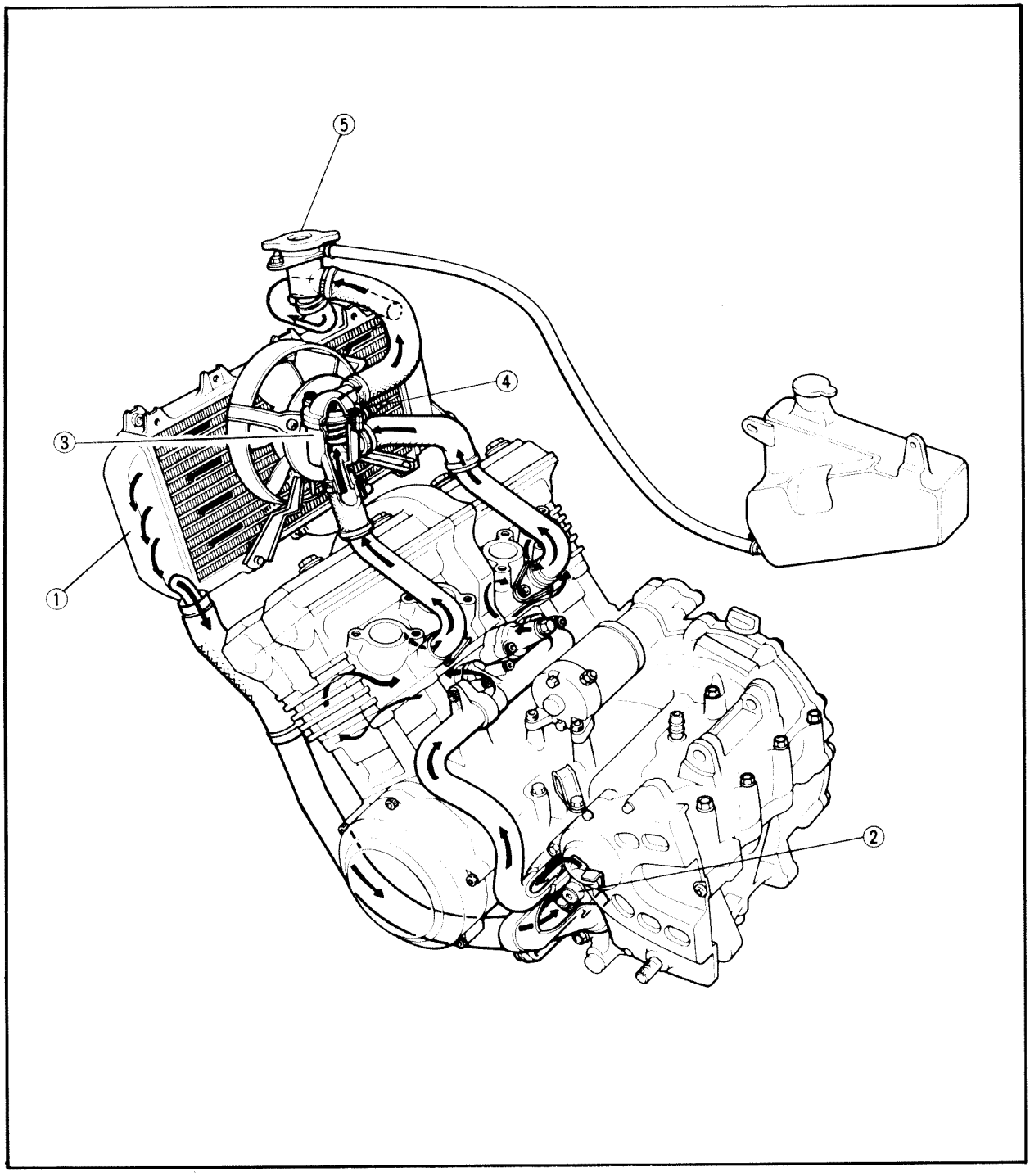
LUBRICATION DIAGRAM

① Oil filter
② Oil strainer
③ Oil pump



COOLANT DIAGRAM

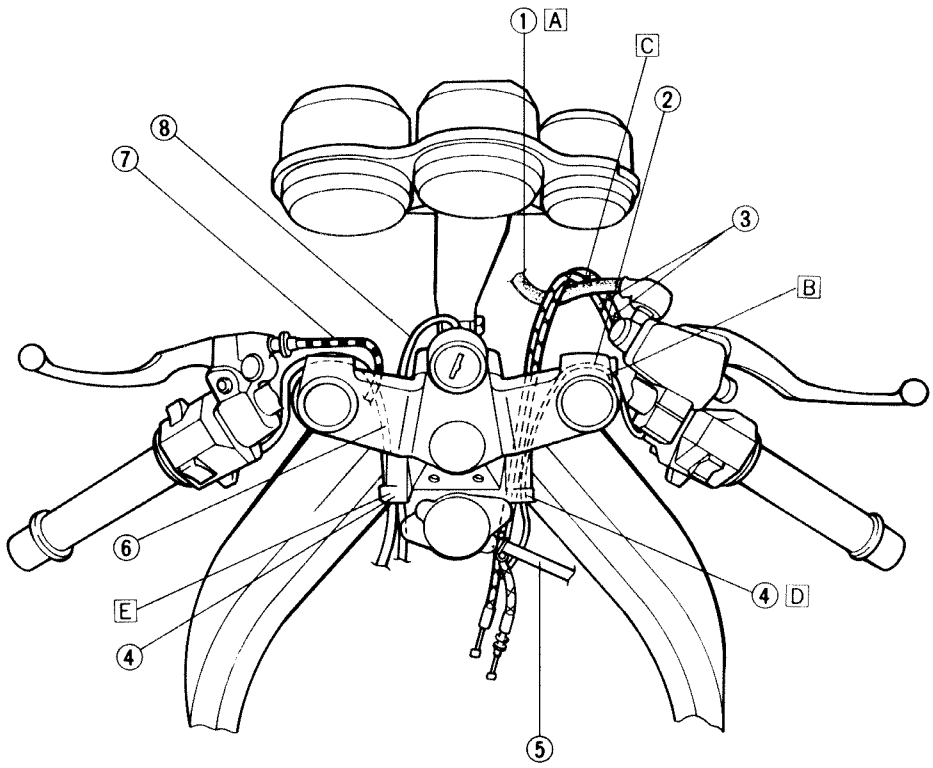
① Radiator
② Water pump
③ Thermostat housing
④ Thermostatic valve
⑤ Radiator cap



CABLE ROUTING

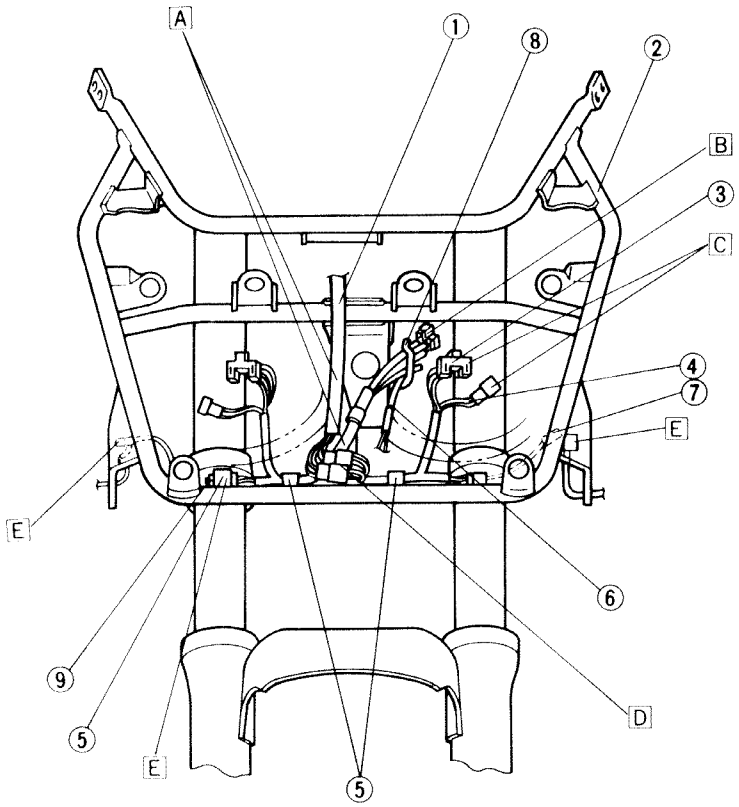
① Front brake hose
② Handlebar switch (right)
③ Throttle cable
④ Clamp
⑤ Radiator breather hose
⑥ Handlebar switch (left) lead
⑦ Clutch cable
⑧ Main switch lead

[A] Pass the brake hose right side of cowling stay.
[B] Pass the handlebar switch (left) lead in front of inner tube.
[C] Pass the throttle cables in front of brake hose.
[D] Clamp the throttle cables and handlebar switch (left) lead.
[E] Clamp the handlebar switch (left) and main switch leads.



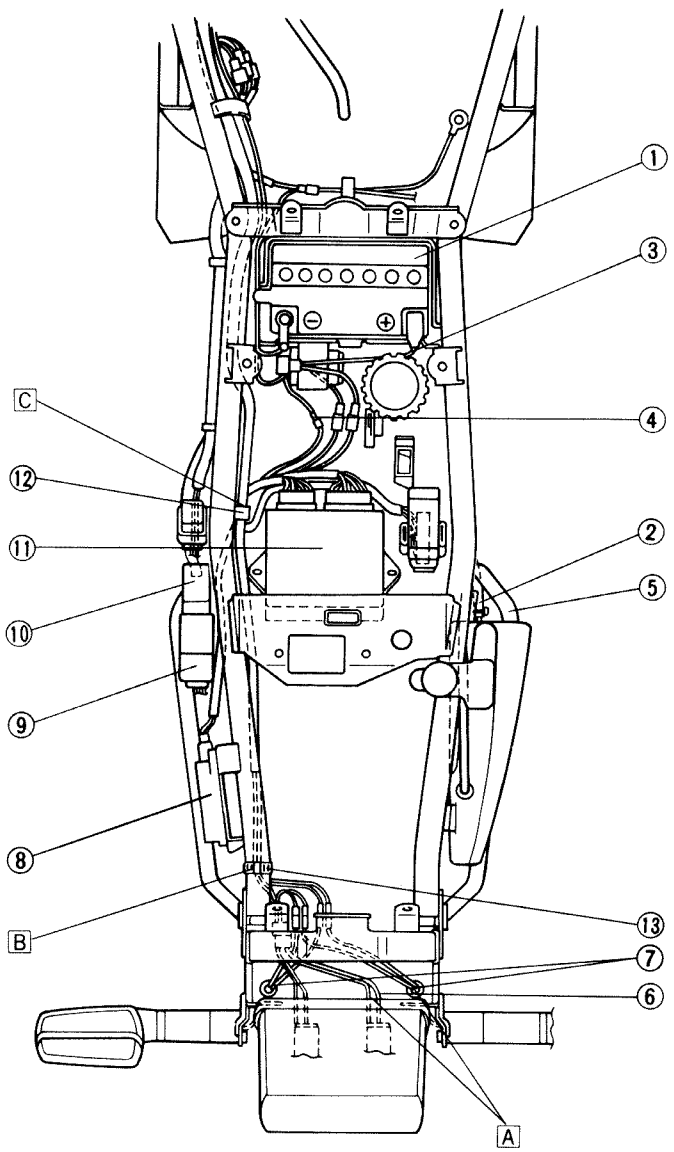
① Meter light lead
② Cowling stay
③ Headlight lead
④ Auxiliary light lead
⑤ Clamp
⑥ Horn lead
⑦ Flasher light (left) lead
⑧ Guide
⑨ Flasher light (right) lead

[A] Pass the headlight and meter light leads between the headlight adjusting screws.
[B] Pass the headlight and horn leads through the guide.
[C] Connect the headlight and auxiliary light leads inside of headlight cover.
[D] Connect the meter light lead between the headlight cover and cowling.
[E] Clamp the flasher light lead.

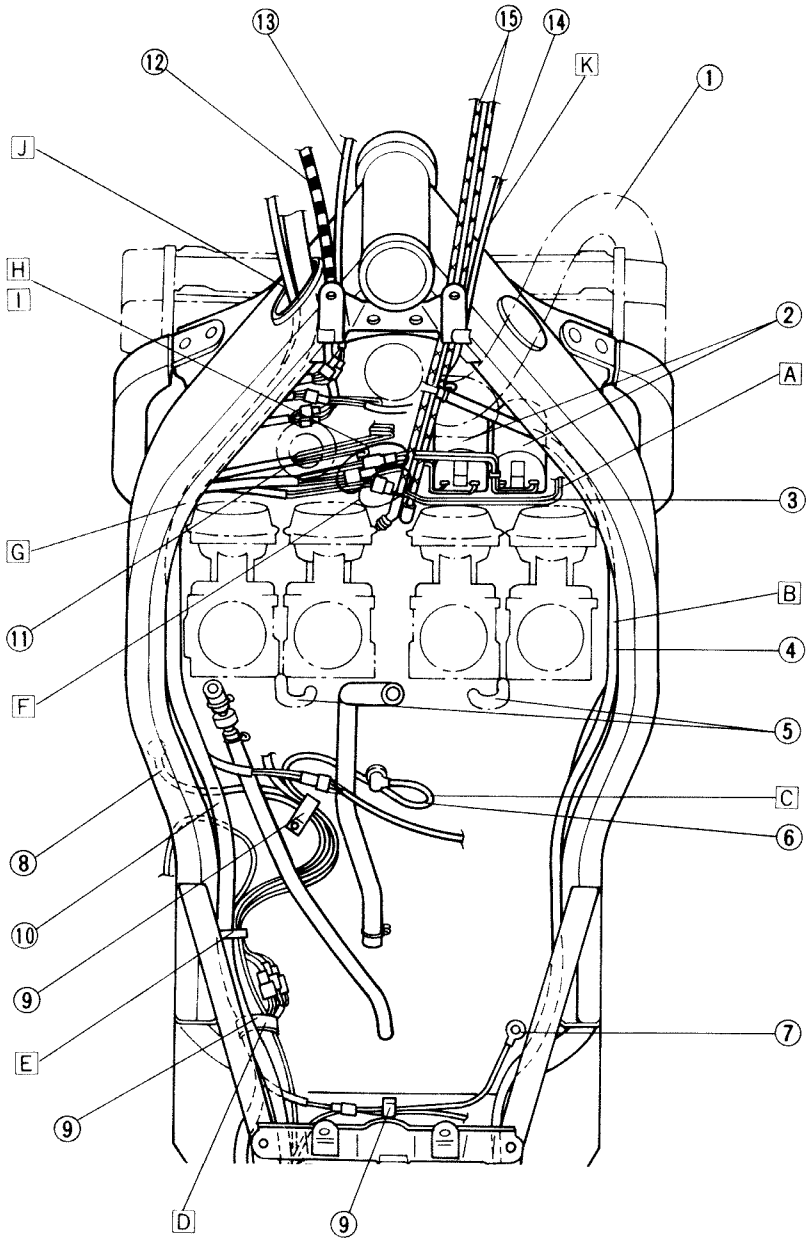


① Battery
② Coolant reservoir hose
③ Battery positive lead
④ Starter relay lead
⑤ Breather hose (coolant reservoir hose)
⑥ Taillight lead
⑦ Rear flasher light lead
⑧ Rectifier/regulator
⑨ Flasher relay
⑩ Relay assembly
⑪ Ignitor unit
⑫ Clamp
⑬ Band

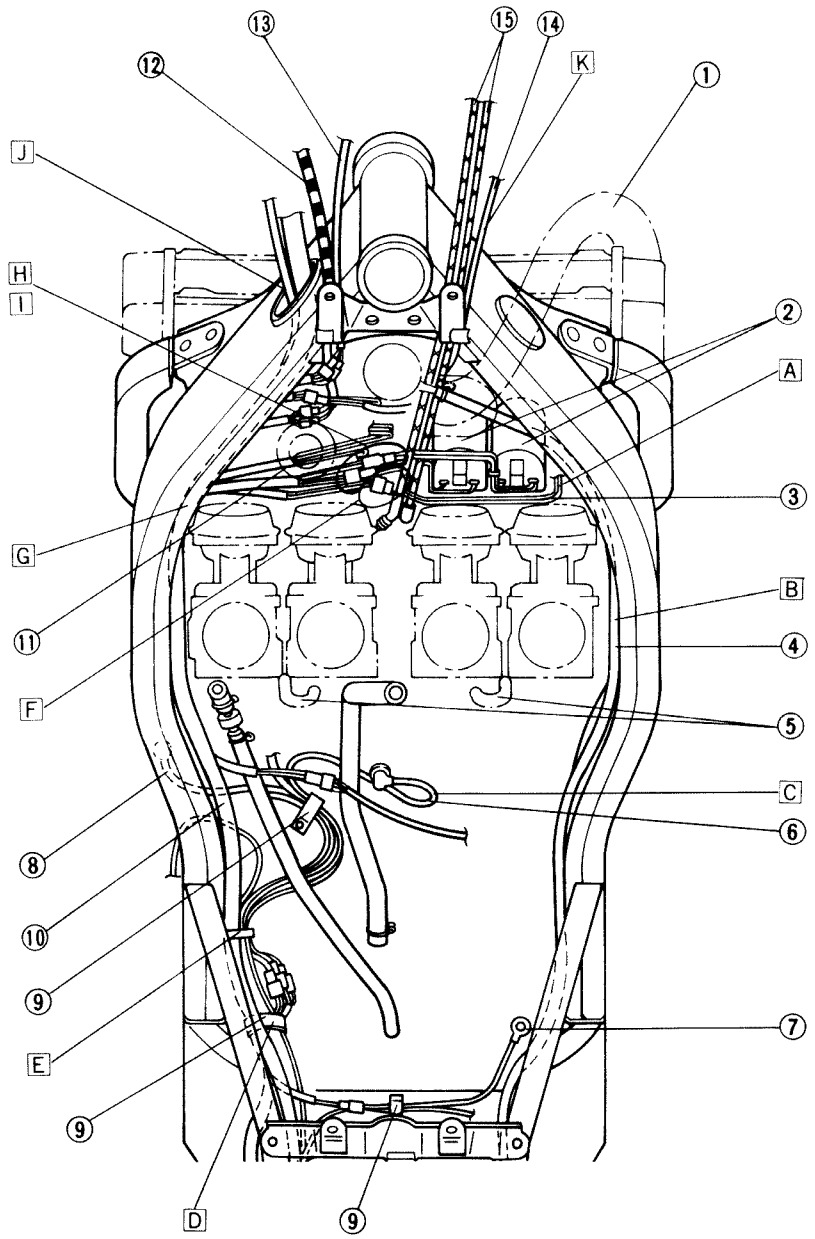
[A] Pass the flasher light lead through the hole in rear fender.
[B] Clamp the taillight and rear flasher light lead.
[C] Clamp the wireharness.



① Radiator hose
② Ignition coil
③ Fan motor lead
④ Radiator breather hose
⑤ Carburetor breather hose
⑥ Starter motor lead
⑦ Ground lead
⑧ A.C. Generator lead
⑨ Clamp
⑩ Wireharness
⑪ Thermo unit
⑫ Clutch cable
⑬ Handlebar switch (left) lead
⑭ Handlebar switch (right) lead
⑮ Throttle cable

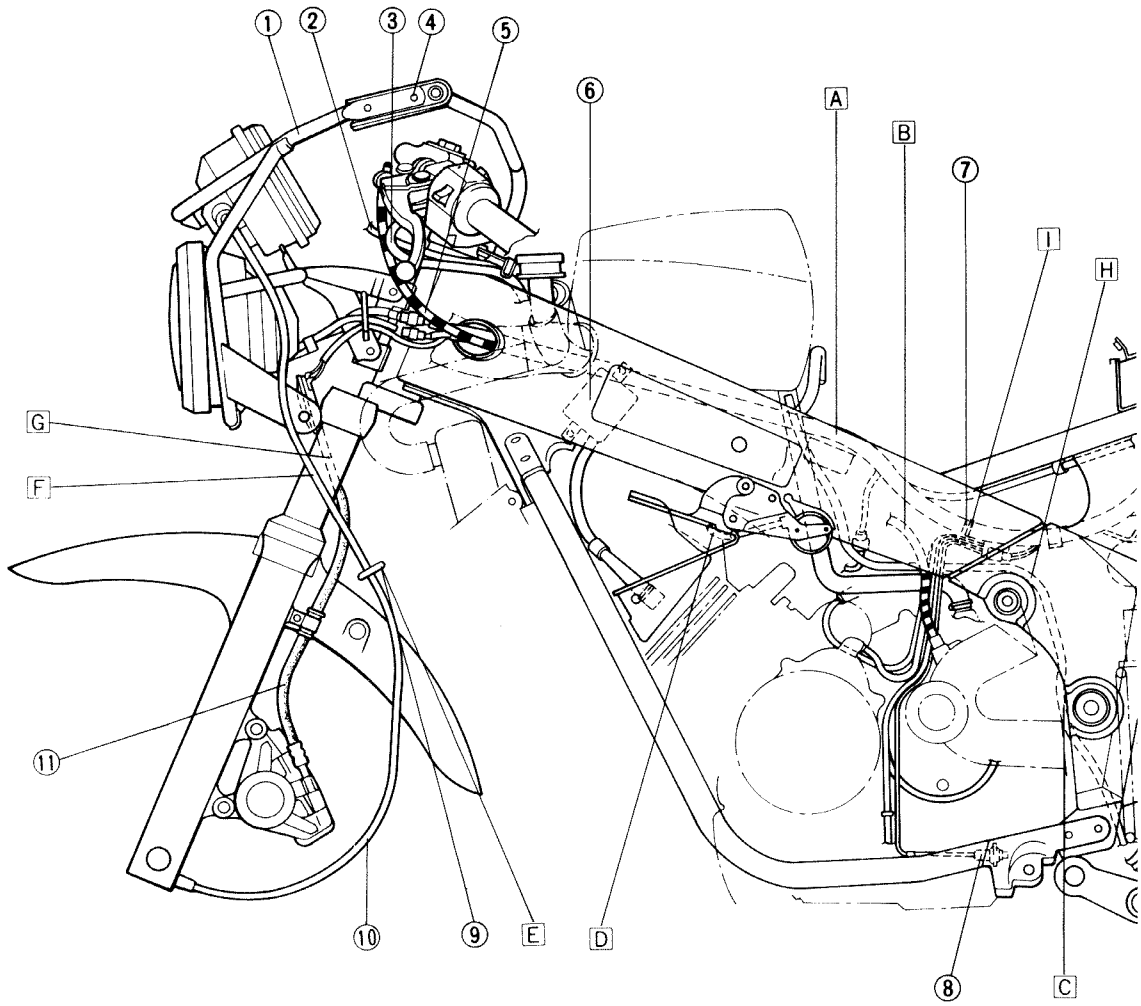


[A] Pass the fan motor lead behind the ignition coil.
[B] Pass the radiator breather hose between the carburetor and frame.
[C] Pass the starter motor lead below the starter motor.
[D] Clamp the wireharness.
[E] Clamp the A.C. magneto, neutral, oil level switch and sidestand switch leads.
[F] Pass the fan motor and ignition coil leads between the throttle cables, and connect them between the conductor and thermo unit.
[G] Position the wireharness so that the white tape is positioned on thermo unit.
[H] Connect the main switch lead between the conductor and thermo unit.
[I] Locate the main switch lead coupler in front of air filter case bracket.
[J] Pass the clutch cable and wireharness through the frame hole.
[K] Pass the throttle cables and handlebar switch lead between the radiator hoses.



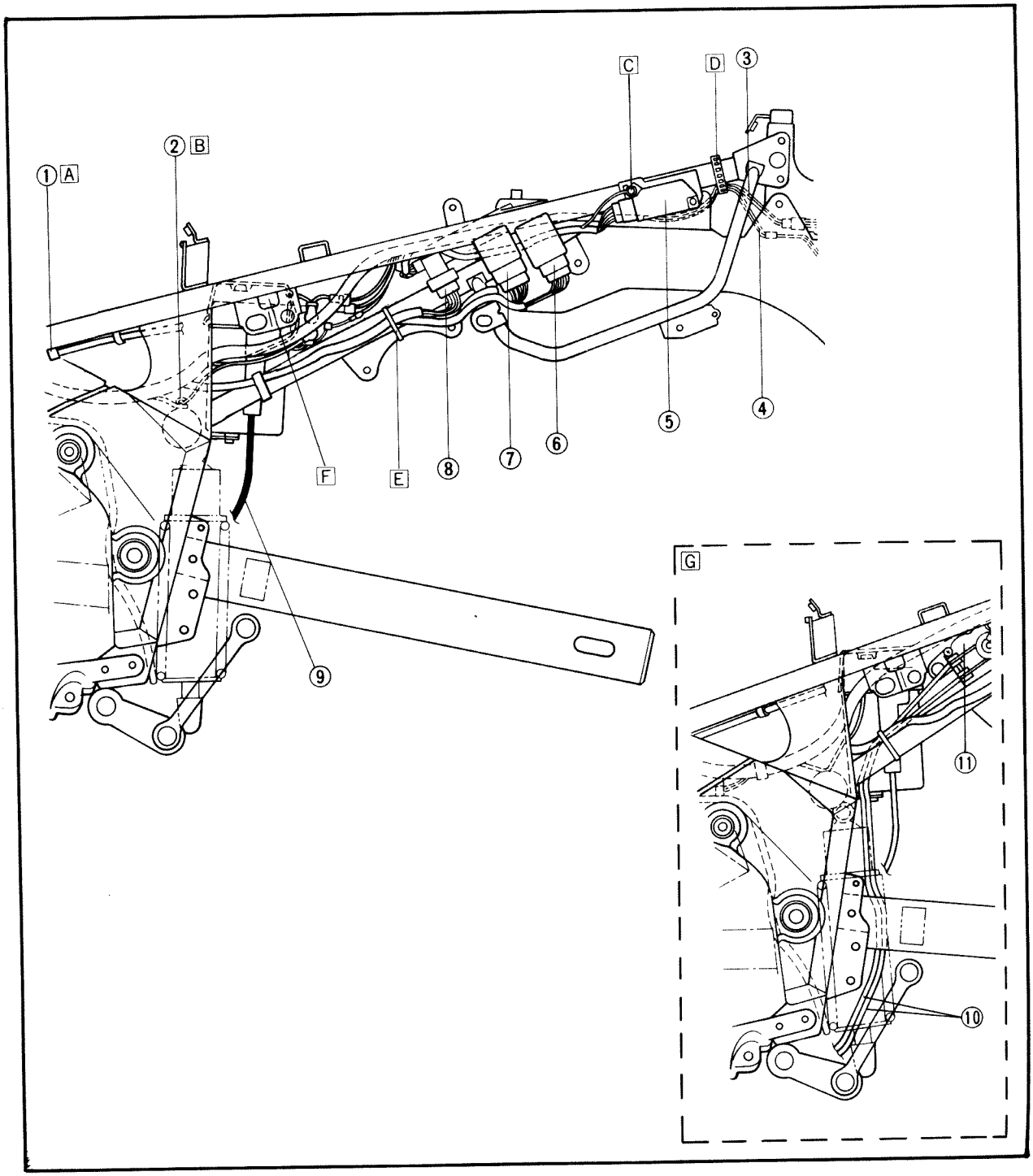
① Cowling stay
② Main switch lead
③ Handlebar switch (left) lead
④ Rear view mirror stay
⑤ Clutch cable
⑥ Thermo unit
⑦ Clamp
⑧ Sidestand switch
⑨ Cable guide
⑩ Speedometer cable
⑪ Front brake hose

[A] Pass the wireharness above the fuel tank bracket.
[B] Pass the clutch cable inside the frame.
[C] Pass the air filter breather hose between the engine and swingarm.
[D] Pass the starter cable behind of the air intake duct.
[E] Pass the speedometer cable through the holder.
[F] Pass the speedometer cable outside of the front fork.
[G] Pass the brake hose inside of the front fork.
[H] Pass the air filter drain hose above the engine mounting bolt, and in front of pivot shaft.
[I] Clamp the sidestand, pickup coil, neutral switch, oil level switch and starter relay leads.



① Clamp
② Ground lead
③ Taillight lead
④ Rear flasher lead
⑤ Rectifier/regulator
⑥ Flasher relay
⑦ Relay assembly
⑧ Main fuse
⑨ Battery breather hose
⑩ "EXUP" control cable
⑪ "EXUP" servo motor

[A] Clamp the sidestand, pickup coil, neutral switch, oil level switch and starter relay leads.
[B] Clamp the rear brake switch and ground leads.
[C] Secure the ground lead with the screw (rectifier/regulator).
[D] Clamp the flasher light lead and taillight leads.
[E] Clamp the wireharness on left side of frame.
[F] Pass the wireharness above the battery box.
[G] For California



PERIODIC INSPECTIONS AND ADJUSTMENTS

INTRODUCTION

This chapter includes all information necessary to perform recommended inspections and adjustments. These preventive maintenance procedures, if followed, will ensure more reliable vehicle operation and a longer service life. The need for costly overhaul work will be greatly reduced. This information applies to vehicles already in service as well as new vehicles that are being prepared for sale. All service technicians should be familiar with this entire chapter.

MAINTENANCE INTERVALS CHART

Proper periodic maintenance is important. Especially important are the maintenance services related to emissions controls. These controls not only function to ensure cleaner air but are also vital to proper engine operation and maximum performance. In the following maintenance tables, the services related to emissions control are grouped separately.

PERIODIC MAINTENANCE EMISSION CONTROL SYSTEM

No.	Item	Remarks	Initial	Odometer readings				
			1,000 km or 1 month (600 mi)	**1 7,000 km or 7 months (4,400 mi)	**2 13,00 km or 13 months (8,200 mi)	19,000 km or 19 months (12,000 mi)	**3 25,000 km or 25 months (15,800 mi)	**4 31,000 km or 31 months (19,600 mi)
1*	Valve clearance	Check and adjust valve clearance when engine is cold.					○	
2	Spark plug	Check condition. Adjust gap and clean. Replace at 13,000 km (or 13 months) and thereafter every 12,000 km (or 12 months).		○	Replace	○	Replace	○
3*	Crankcase breather system	Check breather hose for craks or damage. Replace if necessary.		○	○	○	○	○
4*	Fuel line	Check fuel hose for cracks or damage. Replace if necessary.		○	○	○	○	○
5*	Fuel filter	Replace initial 31,000 km (19,600 mi) and thereafter every 30,000 km (19,000 mi).						Replace
6*	Exhaust system	Check for leakage. Retighten if necessary. Replace gasket(s) if necessary.		○	○	○	○	○
7*	Carburetor Synchronization	Adjust synchronization of carburetors.	○	○	○	○	○	○
8*	Idle speed	Check and adjust engine idle speed. Adjust cable free play.		○	○	○	○	○

* It is recommended that these items be serviced by a Yamaha dealer or other qualified mechanic.

NOTE:

For farther odometer reading, repeat the above maintenance at the period established; **1: Every 6,000 km (3,800 mi), **2: Every 12,000 km (7,600 mi), **3: Every 24,000 km (15,200 mi) and **4: Every 30,000 km (19,000 mi) intervals.

GENERAL MAINTENANCE/LUBRICATION

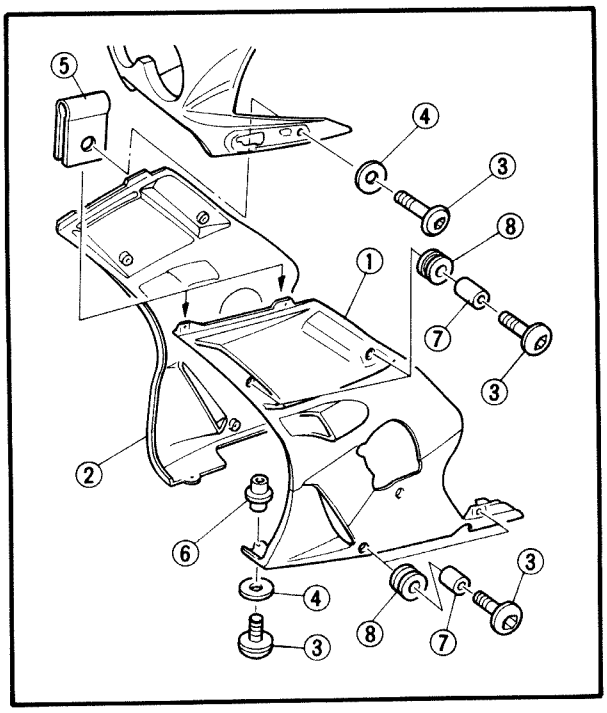
No.	Item	Remarks	Type	Initial	Odometer readings				
				1,000 km or 1 month (600 mi)	**1 7,000 km or 7 months (4,400 mi)	**2 13,00 km or 13 months (8,200 mi)	19,000 km or 19 months (12,000 mi)	**3 25,000 km or 25 months (15,800 mi)	31,000 km or 31 months (19,600 mi)
1	Engine oil	Warm-up engine before draining	* 1) Yamalube 4 (20W40) or SAE 20W40 type "SE" motor oil * 2) Yamalube 4 (10W30) or SAE 10W30 type "SE" motor oil	○	○	○	○	○	○
2*	Oil filter	Replace	–	○		○		○	
3*	Air filter	Clean with compressed air. Replace if necessary.	–		○	○	○	○	○
4*	Cooling system	Check hose for cracks or damage. Replace if necessary.	–		○	○	○	○	○
		Replace coolant every 24 months	Ethylene glycol antifreeze coolant					Replace	
5*	Brake system	Adjust free play. Replace pads if necessary.	–	○	○	○	○	○	○
6	Clutch	Adjust free play.	–	○	○	○	○	○	○
7	Drive chain	Check chain condition. Adjust and lubricate chain thoroughly.	SAE 30W-50W motor oil	Every 500 km (300 mi)					
8	Control and meter cable	Apply chain lube thoroughtly.	Yamaha chain and cable lube or SAE 10W30 motor oil.	○	○	○	○	○	○
9*	Rear arm pivot shaft and suspension link pivots.	Apply grease lightly.	Molybdenum disulfid grease					○	
10	Brake/Clutch lever pivot shaft	Apply chain lube lightly	Yamaha chain and cable lube or SAE 10W30 motor oil.		○	○	○	○	○
11	Brake pedal and change pedal shaft	Lubricate. Apply chain lube lightly.	Yamaha chain and cable lube or SAE 10W30 motor oil.		○	○	○	○	○
12*	Sidestand pivot	Check operation and lubricate. Apply chain lube lightly.	Yamaha chain and cable lube or SAE 10W30 motor oil.		○	○	○	○	○
13*	Front fork	Check operation and leakage.	–		○	○	○	○	○

No.	Item	Remarks	Type	Initial	Odometer readings				
				1,000 km or 1 month (600 mi)	**1 7,000 km or 7 months (4,400 mi)	**2 13,000 km or 13 months (8,200 mi)	19,000 km or 19 months (12,00 mi)	**3 25,000 km or 25 months (15,800 mi)	31,000 km or 31 months (19,600 mi)
14*	Steering bearings	Check bearings assembly for looseness. Moderately repack every 24,000 km (15,200 mi).	Medium weight wheel bearing grease.		○	○	○	○	○
15*	Wheel bearings	Check bearings for smooth rotation.	–		○	○	○	○	○
16	Battery	Check specific gravity and breather pipe for proper operation.	–		○	○	○	○	○
17*	Sidestand switch	Check and clean or replace if necessary.	–	○	○	○	○	○	○

*1) If ambient temperature does not go below 5°C.
*2) If ambient temperature does not go above 15°C.
* It is recommended that these items be service by a Yamaha dealer or other qualified mechanic.

NOTE:

For farther odometer reading, repeat the above maintenance at the period established; **1: Every 6,000 km (3,800 mi), **2: Every 12,000 km (7,600) and **3: Every 24,000 km (15,200 mi) intervals.

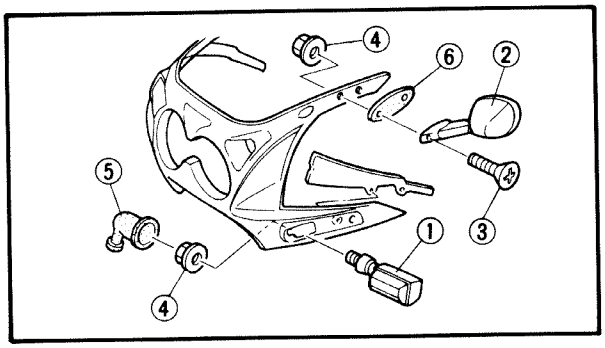


COWLINGS/COVERS REMOVAL AND INSTALLATION

REMOVAL

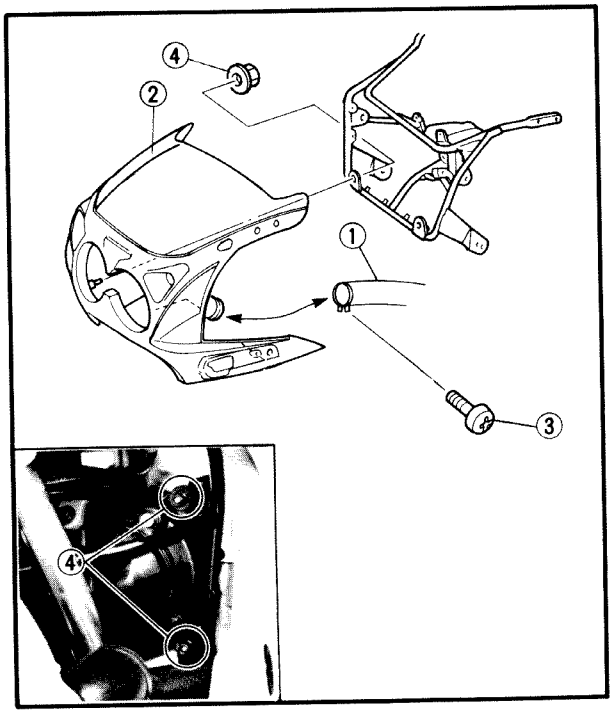
1. Remove:
   - Side cowlings (left ① and right ②)

③ Bolt
④ Plastic washer
⑤ Spring nut
⑥ Special nut
⑦ Collar
⑧ Damper



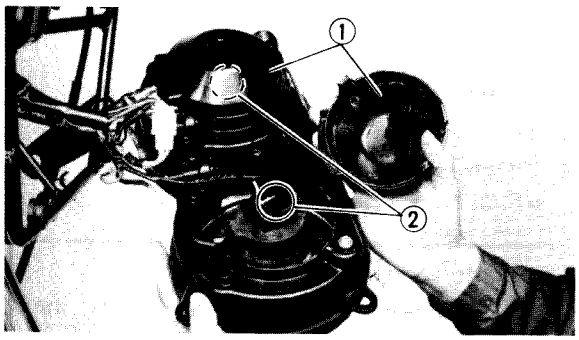
2. Remove:
   - Flasher lights (left and right) ①
   - Rear view mirror (left and right) ②

③ Screw
④ Nut
⑤ Cap
⑥ Damper

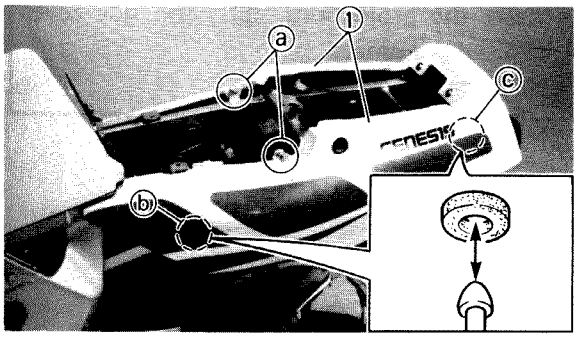


3. Remove:
   - Air intake ducts (left and right) ①
   - Upper cowling ②

③ Screw
④ Nut



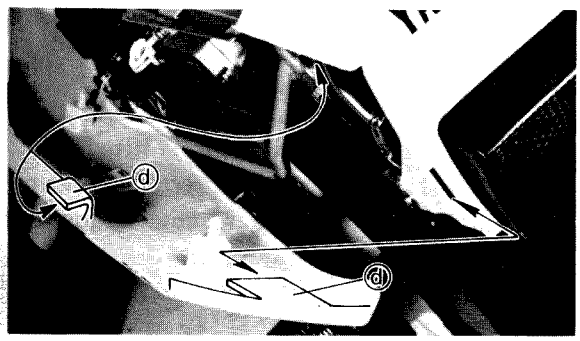
4. Remove:
   - Headlight covers (left and right) ①
5. Disconnect:
   - Headlight couplers (left and right) ②

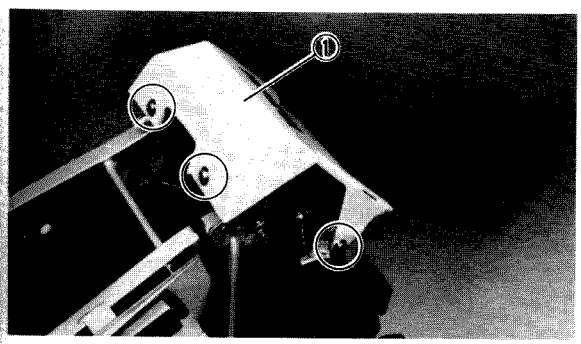


Covers

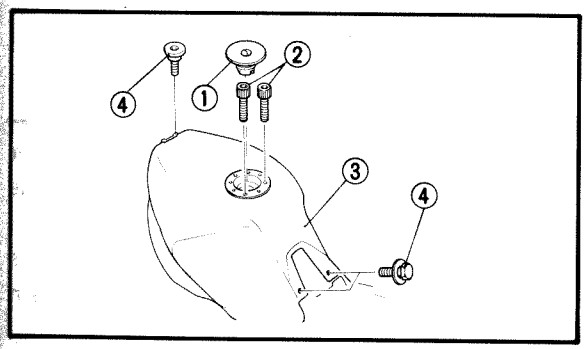
1. Remove:
   - Seats (front and rear)
   - Side covers (left and right) ①

Removal Steps:
- Remove the screws ⓐ.
- Unhook the projections ⓑ, ⓒ on the side cover from the frame – grommets.
- Unhook the hooks ⓓ on the side cover the slot in the trail cover.





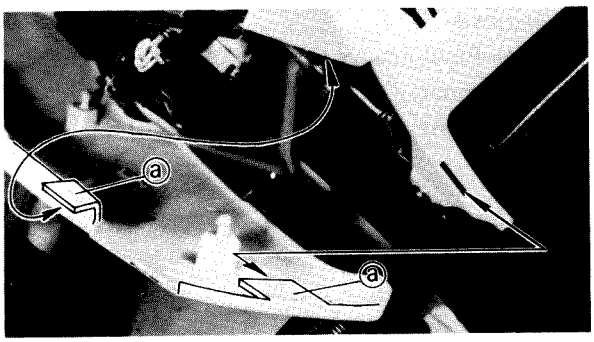
2. Remove:
   - Tail cover ①

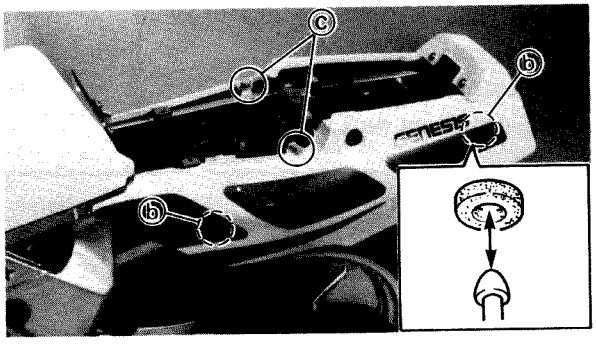


3. Remove:
   - Fuel tank cap ①
   - Socket head bolt ②
   - Top cover ③

NOTE:
It is necessary to remove the two bolts ② as shown to remove the top cover.

④ Bolts





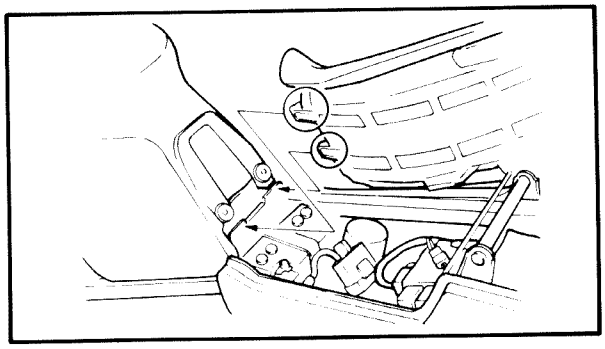
INSTALLATION

Reverse the "REMOVAL" procedure.
Note the following points.

Covers

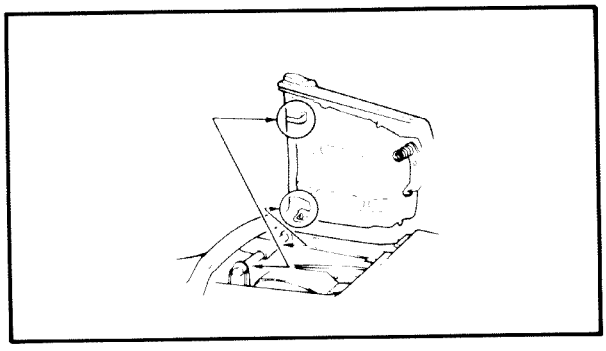
1. Install:
   - Side covers (left and right)

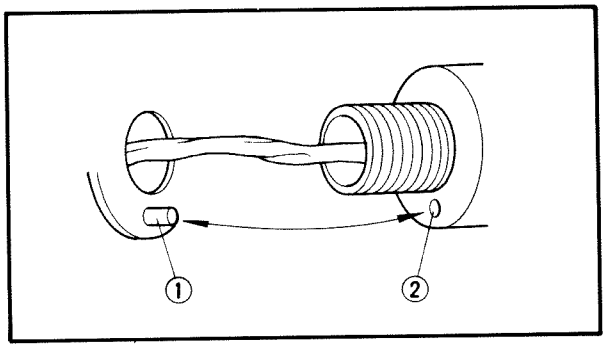
Installation Steps:
- Hook the hook ⓐ on the side cover into the slot in the tail cover.
- Insert the projections ⓑ, on side cover into the grommets.
- Install the screw ⓒ.



2. Install:
   - Seat

NOTE:
- Make sure that the seat is securely fitted.
- When reinstalling the seat, insert the lobes on the seat front into the receptacles on the frame, then push down the seat.



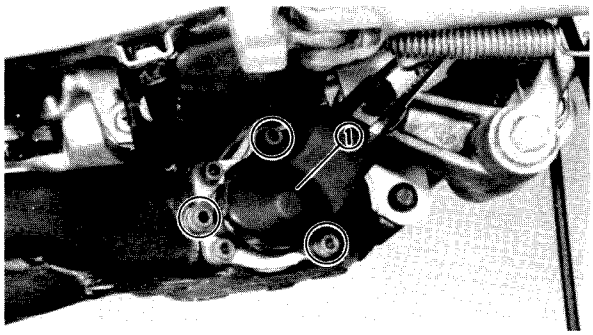


3. Install:
   - Flasher light (left and right)

NOTE:
- Make sure the projection ① on the flasher light stay are meshed with hole ② in the flasher light.
- For flasher lights, on the left side install the chocolate lead. Next, install the dark green lead on the right side.

4. Connect:
   - Flasher light leads
   - Headlight leads

NOTE:
The leads of identical colors should be connected.



ENGINE

EXUP CABLE ADJUSTMENT (For California only)

1. Remove:
   - Lower cowling (left)
   - Seat

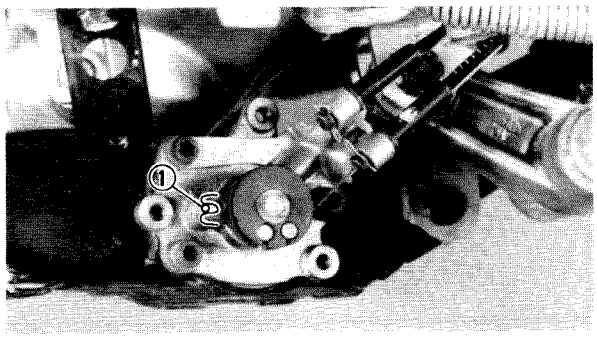
   Refer to the "COWLINGS COVERS REMOVAL AND INSTALLATION" section.
2. Remove:
   - Valve cover ①
3. Turn on the main switch.

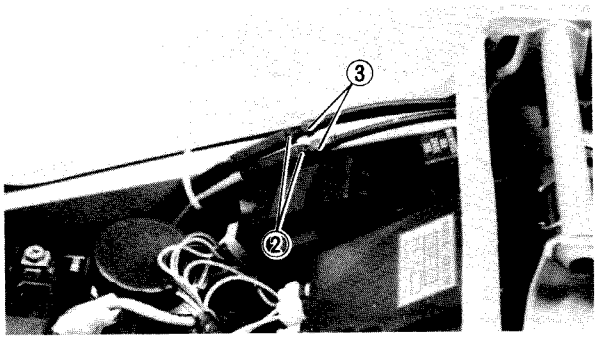
NOTE:

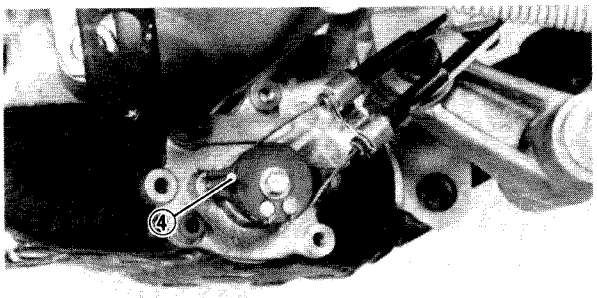
If does not operate EXUP servo motor, refer to the "EXUP SYSTEM" section in the CHAPTER 8.

4. Check:
   - Alignment mark ①

   Not aligned → Adjust EXUP cables.
5. Adjust:
   - EXUP cables





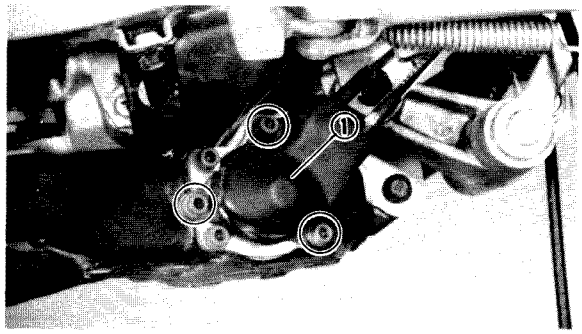


Adjustment steps:

- Loosen both locknuts ② and turn in both adjusters ③.
- Insert a [φ4 mm (φ0.16 in)] pin ④ through the alignment in the pulley and into the hole.
- Turn both adjusters counterclockwise by hand until any free play present in the cables has been eliminated.
- Turn both adjusters 1/2 turn clockwise.
- Tighten the locknuts.

Locknuts:
8 Nm (0.8 m · kg, 5.8 ft · lb)

- Remove the pin.
- Turn off the main switch, then turn the EXUP pulley (servo motor) back in the direction indicated by the arrow until it steps.
- Turn on the main switch once, and check that the alignment is set properly. If not, repeat the steps described above.



6. Install:
   - Valve cover ①

	Bolts (valve cover): **10 Nm (1.0 m · kg, 7.2 ft · lb)**

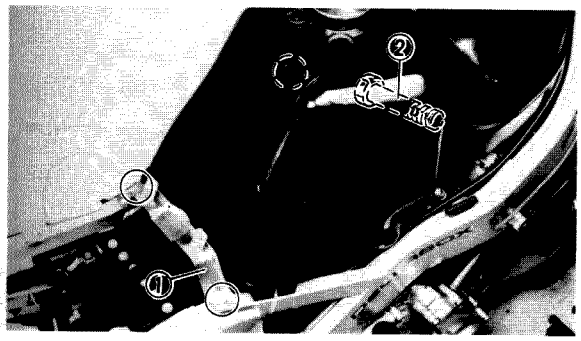
VALVE CLEARANCE ADJUSTMENT

⚠ WARNING:

The engine must be cool before servicing the valve clearance.

NOTE:

Measure and adjust valve clearance when piston is at TDC on compression stroke.

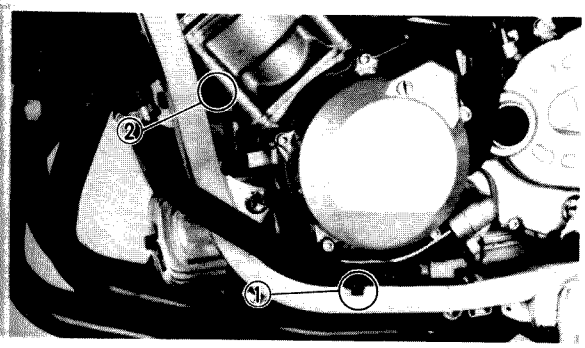


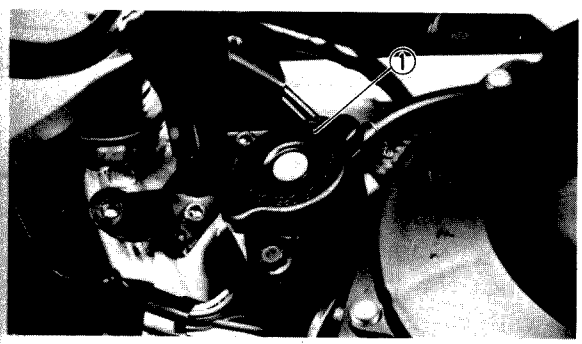
Removal

1. Remove:
   - Side cowlings
   - Top cover

   Refer to "COWLINGS/COVERS REMOVAL AND INSTALLATION" section.
2. Remove:
   - Fuel tank bracket ①
   - Bolt (fuel tank) ②

   Lift up the fuel tank.
3. Place a drain pan under the drain bolts.
4. Remove:
   - Drain bolt (outlet pipe) ①
   - Drain bolt (cylinder) ②

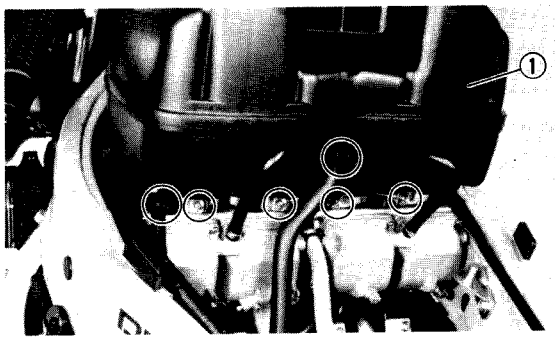




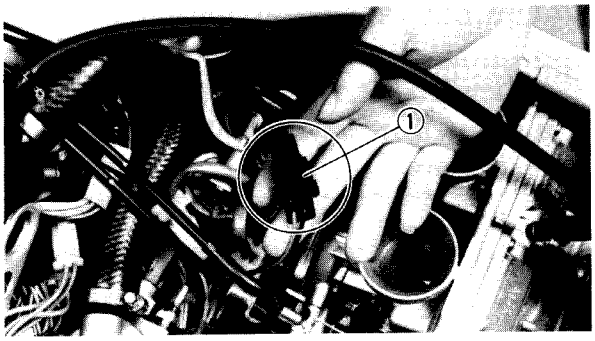
5. Remove:
   - Radiator cap ①

6. Drain:
   - Cooling system

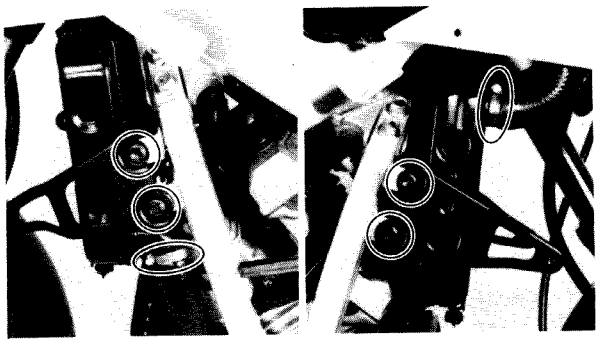
   Refer to the "COOLANT REPLACEMENT" section.



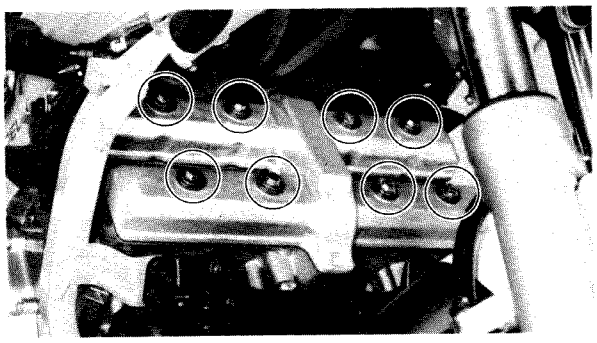
7. Loosen:
   - Screw (air filter case – carburetor)
8. Remove:
   - Air filter case ①



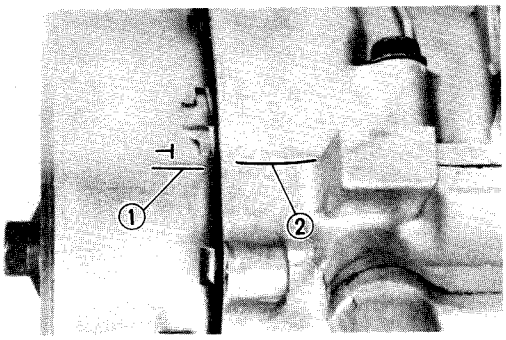
9. Disconnect:
   - Fan motor coupler ①



10. Disconnect:
    - Hose (radiator – inlet)
    - Hose (radiator – outlet)
11. Remove:
    - Radiator



12. Remove:
    - Spark plug leads
    - Cylinder head cover
    - Generator cover

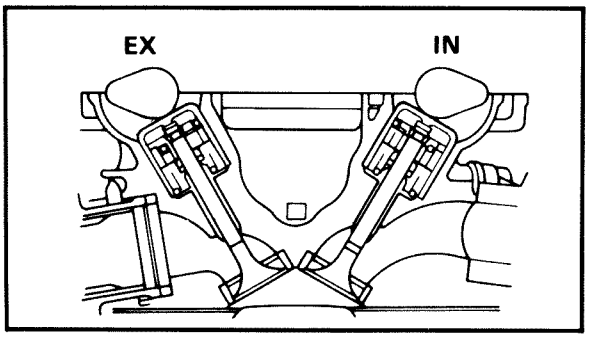


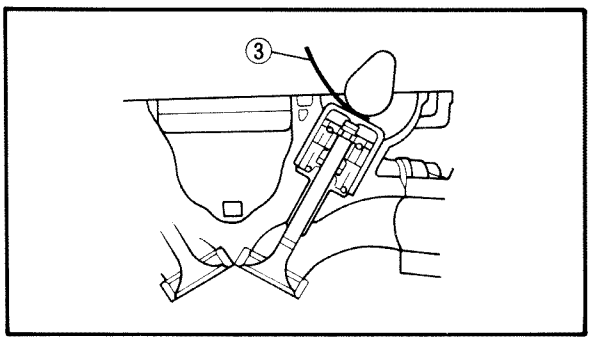
Adjustment

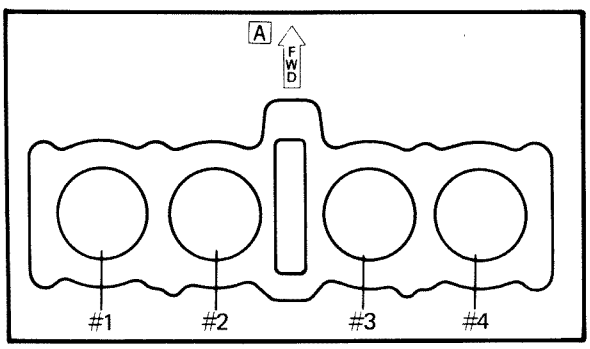
Valve Clearance Measurement

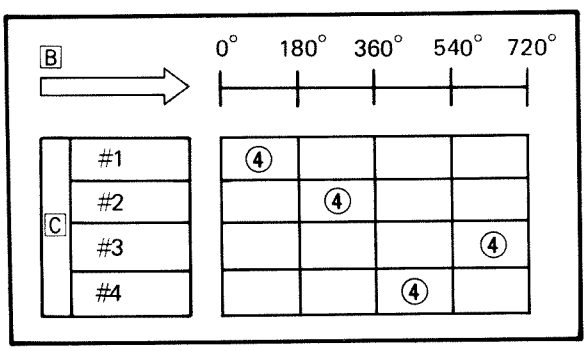
1. Measure:
   - Valve clearance

Valve Clearance Measurement Steps:
- Turn the crankshaft counterclockwise.
- Align the "T" mark ① on the magneto with the crankcase end ② when #1 piston is at TDC on compression stroke.









NOTE:
Compression TDC can be found when the cam lobes are apart from each other, as shown.

- Measure the valve clearance using thickness gauge ③ .
  Out of specification → Adjust valve clearance.

Intake valve (cold):
0.11 ~ 0.20 mm (0.004 ~ 0.008 in)
Exhaust valve (cold):
0.21 ~ 0.30 mm (0.008 ~ 0.012 in)

- Record the measured amount it the clearance is incorrect.
- Measure the valve clearance in sequence, for #2, 4 and #3 cylinders.
  Out of specification → Adjust valve clearance.

Firing sequence:
#1 → #2 → #4 → #3

A Front

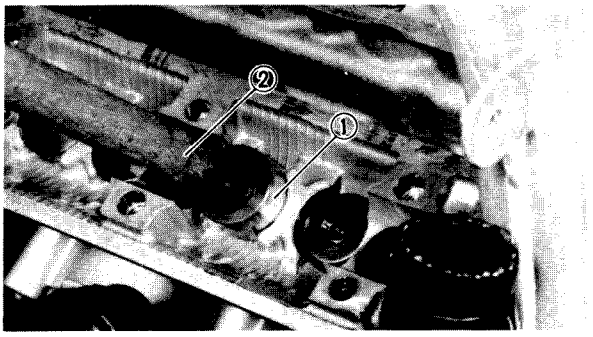
NOTE:
Turn the crankshaft each degrees counterclockwise from #1 Cylinder TDC.

#2 Cylinder	180 degrees
#4 Cylinder	360 degrees
#3 Cylinder	540 degrees

B Crankshaft counterclockwise turning angle
C Cylinder
④ Combustion

Adjusting Pad Replacement

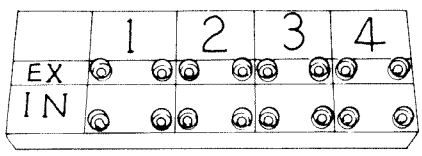
1. Remove:
   - Timing chain tensioner
   - Chain guide (upper)
   - Chain guide (exhaust side)
   - Camshaft caps (exhaust and intake)
   - Timing chain
   - Cam shafts (intake and exhaust)



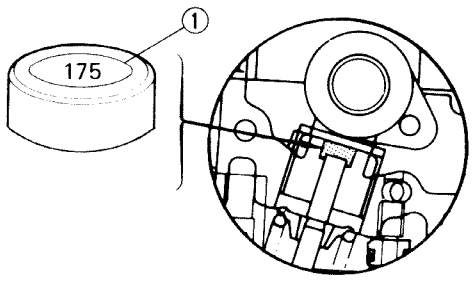
NOTE:
Refer to the "ENGINE DISASSEMBLY CAMSHAFT AND CYLINDER HEAD – Procedure 2", in the CHAPTER 4.
Fasten the wire to the timing chain to prevent it from falling into the crankcase.

2. Remove:
   - Valve lifter ①
   - Pad

   Use valve lapper ② .
   Record the installed pad number.



NOTE:
- Place a rug in the timing chain room to prevent the pad from falling into the crankcase.
- Identify each valve lifter and pad position very carefully so that it can be reinstalled in its original place.



3. Select:
   - Proper pad

Selection steps:
- Select the proper pad from the table:

Pad range		Pad availability: 25 increments
No. 120 ~ No 240	1.20 mm (0.047 in) 2.40 mm (0.094 in)	Pads stepped in 0.05 mm (0.002 in) increments

NOTE:
Thickness ① of each pad is marked on the pad top surface.

- Round off the hundredths digit of the installed pad number to the nearest 0.05 mm increment.

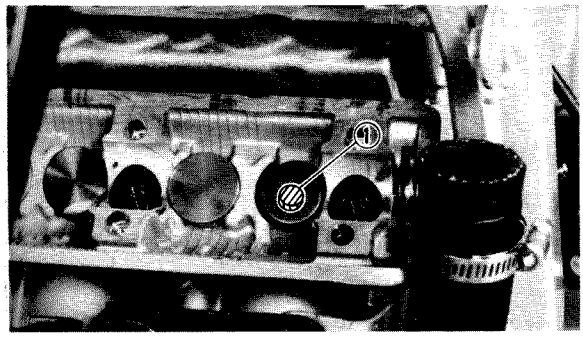
Hundredths digit	Rounded valve
0 or 2	0
5	(NOT ROUNDED OFF)
8	10

EXAMPLE:
Installed pad number = 148 (1.48 mm)
Rounded off digit = 150

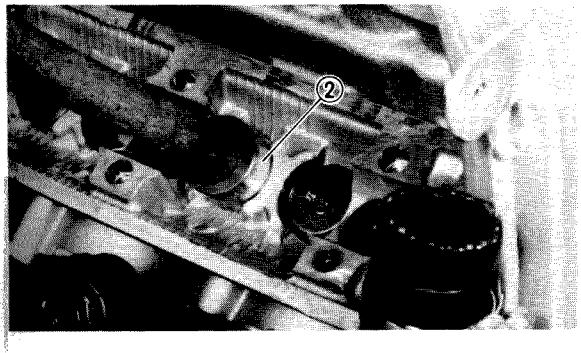
NOTE:
Pads can only be selected in 0.05 mm (0.002 in) increments.

- Locate the "Rounded off Pad Number" on the chart, and then find the measured valve clearance. The point where these coordinates intersect is the new pad number.

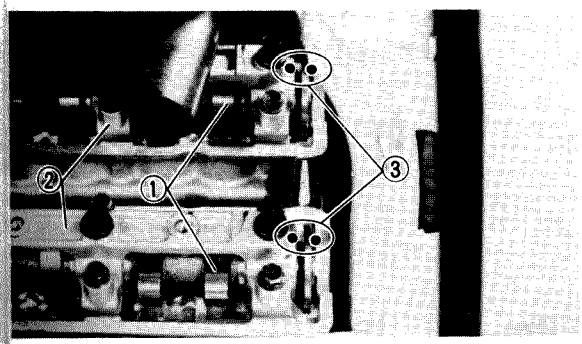
NOTE:
Use the new pad number as a guide only as the number must be verified.



4. Install:
   - Pad (new) ①
5. Install:
   - Valve lifter ②



NOTE:
- Apply molybdenum disulfide grease to the pad and valve lifter.
- Valve lifter must be rotated smoothly by a finger.
- Each valve lifter and pad position very carefully so that its original place.



6. Install:
   - Camshaft (exhaust and intake) ①
   - Timing chain
   - Camshaft caps ②

   Refer to "ENGINE ASSEMBLY AND ADJUSTMENT – CAMSHAFT" section in the CHAPTER 4.

Bolts (camshaft cap):
10 Nm (1.0 m · kg, 7.2 ft · lb)

NOTE:
- Install the exhaust camshaft first.
- Align the matching marks ③ .
- Apply molybdenum disulfide grease to the camshafts and cam caps.

INTAKE

B MEASURED CLEARANCE	A INSTALLED PAD NUMBER																								
	120	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240
0.00 ~ 0.02				120	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225
0.03 ~ 0.07			120	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230
0.08 ~ 0.10		120	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235
0.11 ~ 0.20	RECOMMENDED CLEARANCE																								
0.21 ~ 0.22	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240	
0.23 ~ 0.27	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240		
0.28 ~ 0.32	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240			
0.33 ~ 0.37	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240				
0.38 ~ 0.42	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240					
0.43 ~ 0.47	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240						
0.48 ~ 0.52	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240							
0.53 ~ 0.57	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240								
0.58 ~ 0.62	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240									
0.63 ~ 0.67	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240										
0.68 ~ 0.72	175	180	185	190	195	200	205	210	215	220	225	230	235	240											
0.73 ~ 0.77	180	185	190	195	200	205	210	215	220	225	230	235	240												
0.78 ~ 0.82	185	190	195	200	205	210	215	220	225	230	235	240													
0.83 ~ 0.87	190	195	200	205	210	215	220	225	230	235	240														
0.88 ~ 0.92	195	200	205	210	215	220	225	230	235	240															
0.93 ~ 0.97	200	205	210	215	220	225	230	235	240																
0.98 ~ 1.02	205	210	215	220	225	230	235	240																	
1.03 ~ 1.07	210	215	220	225	230	235	240																		
1.08 ~ 1.12	215	220	225	230	235	240																			
1.13 ~ 1.17	220	225	230	235	240																				
1.18 ~ 1.22	225	230	235	240																					
1.23 ~ 1.27	230	235	240																						
1.28 ~ 1.32	235	240																							
1.33 ~ 1.37	240																								

EXAMPLE:

VALVE CLEARANCE (cold):
0.11 ~ 0.20 mm (0.004 ~ 0.008 in)
Installed is 148 (Rounded off number is 150)
Measured clearance is 0.24 mm (0.009 in)
Replace 148 pad with 160 pad

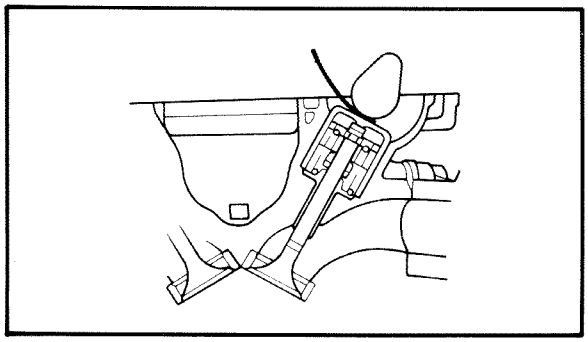
EXHAUST

B MEASURED CLEARANCE	A INSTALLED PAD NUMBER																								
	120	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240
0.00 ~ 0.02						120	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215
0.03 ~ 0.07					120	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220
0.08 ~ 0.12				120	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225
0.13 ~ 0.17			120	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230
0.18 ~ 0.20		120	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235
0.21 ~ 0.30	RECOMMENDED CLEARANCE																								
0.31 ~ 0.32	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240	
0.33 ~ 0.37	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240		
0.38 ~ 0.42	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240			
0.43 ~ 0.47	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240				
0.48 ~ 0.52	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240					
0.53 ~ 0.57	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240						
0.58 ~ 0.62	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240							
0.63 ~ 0.67	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240								
0.68 ~ 0.72	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240									
0.73 ~ 0.77	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240										
0.78 ~ 0.82	175	180	185	190	195	200	205	210	215	220	225	230	235	240											
0.83 ~ 0.87	180	185	190	195	200	205	210	215	220	225	230	235	240												
0.88 ~ 0.92	185	190	195	200	205	210	215	220	225	230	235	240													
0.93 ~ 0.97	190	195	200	205	210	215	220	225	230	235	240														
0.98 ~ 1.02	195	200	205	210	215	220	225	230	235	240															
1.03 ~ 1.07	200	205	210	215	220	225	230	235	240																
1.08 ~ 1.12	205	210	215	220	225	230	235	240																	
1.13 ~ 1.17	210	215	220	225	230	235	240																		
1.18 ~ 1.22	215	220	225	230	235	240																			
1.23 ~ 1.27	220	225	230	235	240																				
1.28 ~ 1.32	225	230	235	240																					
1.33 ~ 1.37	230	235	240																						
1.38 ~ 1.42	235	240																							
1.43 ~ 1.47	240																								

EXAMPLE:

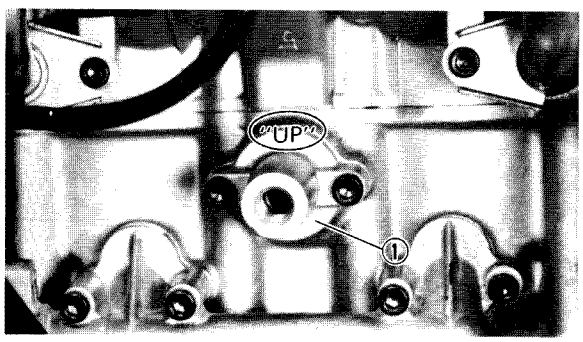
VALVE CLEARANCE (cold):
0.21 ~ 0.30 mm (0.008 ~ 0.012 in)
Installed is 175
Measured clearance is 0.35 mm (0.014 in)
Replace 175 pad with 185 pad

NOTE:
- Refer to the "ENGINE ASSEMBLY AND ADJUSTMENT – CYLINDER HEAD AND CAMSHAFT" section in the CHAPTER 4.
- Lubricate the crankshaft bearing surfaces cam lobes and cam journals with engine oil.
- Turn the crankshaft counterclockwise several turns for the installed parts to settle into the correct position.



6. Measure:
   - Valve clearance

Valve clearance verification steps:
- Follow the valve clearance measurement steps.
- If the clearance is incorrect, repeat all Adjusting Pad Replacement steps until the proper clearance is obtained.



Installation

Reverse the "REMOVAL" procedure.

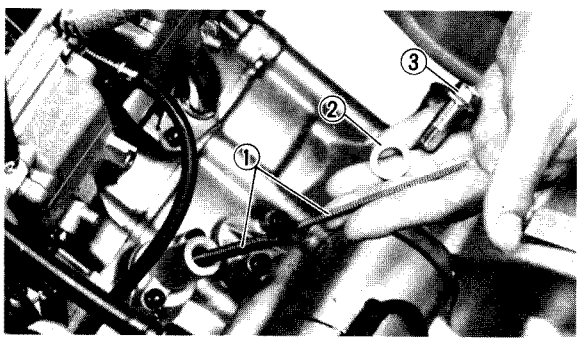
Note the following points.

1. Install:
   - Timing chain tensioner ①

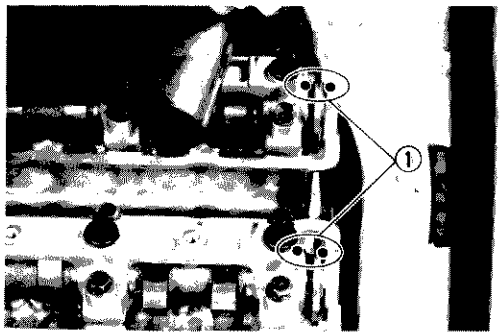
NOTE:

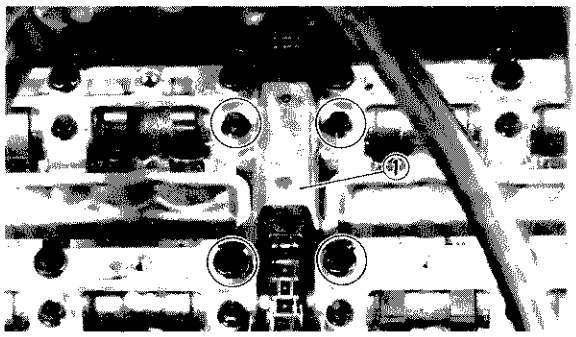
Install the Timing chain tensioner with the "UP" mark facing upward.

	Bolts (cam chain tensioner): 10 Nm (1.0 m · kg, 7.2 ft · lb)



2. Install:
   - Spring ①
   - Washer ②
   - Timing chain tensioner cap ③





3. Recheck:
   - Align the matching marks ① .

4. Install:
   - Chain guide (upper) ①
   - Chain guide (exhaust side)

	Bolts (chain guide): **10 Nm (1.0 m · kg, 7.2 ft · lb)**

5. Install:
   - Cylinder head cover

	Bolts (cylinder head cover): **10 Nm (1.0 m · kg, 7.2 ft · lb)**

6. Fill:
   - Cooling system

   Refer to "COOLANT REPLACEMENT".

	Recommended coolant: **High quality ethylene glycol anti-freeze containing anti-corrosion for aluminum engine inhibitors** **Coolant and water mixed ratio:** **50%/50%** **Total amount:** **2.3 L (2.0 Imp qt, 2.4 US qt)**

CARBURETOR SYNCHRONIZATION

Carburetors must be adjusted to open and close simultaneously.

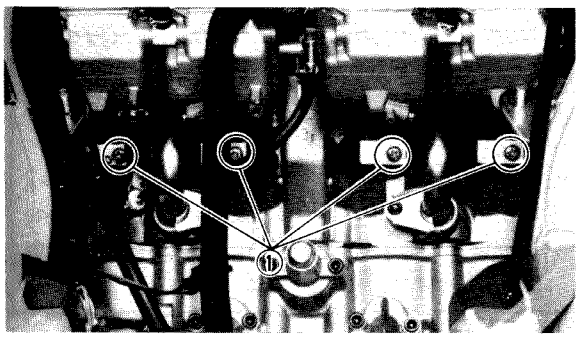
NOTE:

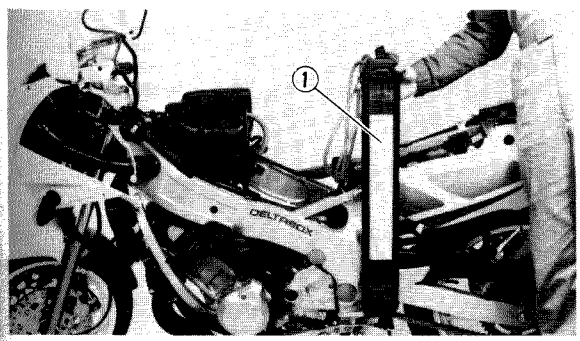
Valve clearance must be set properly before synchronizing the carburetors.

1. Remove:
   - Side cowlings
   - Seat

   Refer to the "COWLING/COVERS REMOVAL AND INSTALLATION – REMOVAL" section.
2. Remove:
   - Fuel tank

   Refer to the "CARBURETOR - REMOVAL" section in the CHAPTER 6.
3. Remove:
   - Vacuum plugs ①

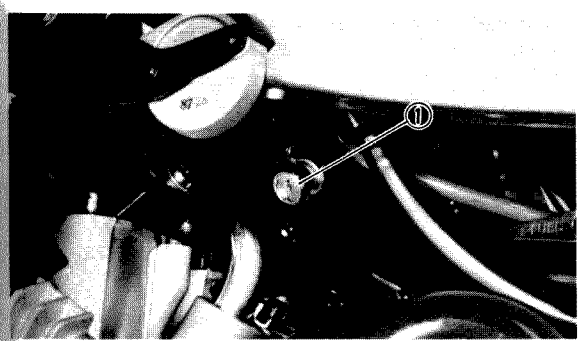




4. Attach
   - Vacuum gauge ①
   - Sub tank

Vacuum gauge:
P/N YU-08030
90890-03094

5. Start the engine and let it warm up.

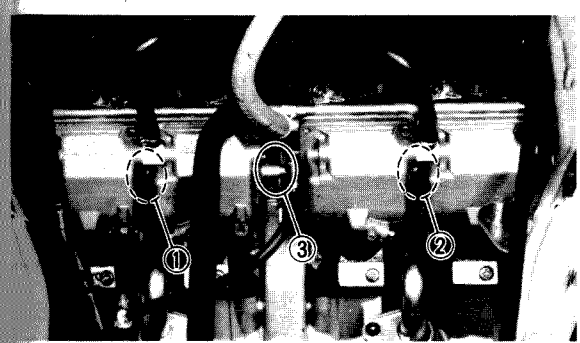


6. Adjust:
   - Idle speed

   Turn the throttle stop screw ① .

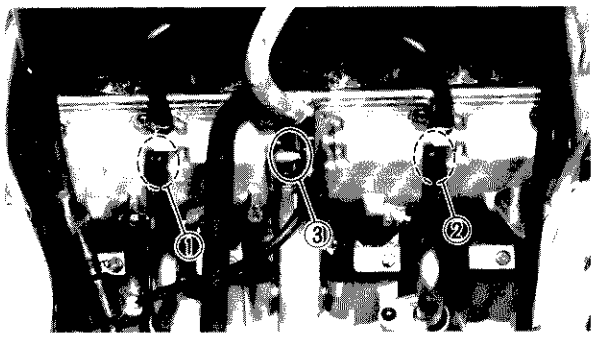
Turn in	**Engine speed is increased.**
Turn out	**Engine speed is decreased.**

Idle speed:
1,150 ~ 1,250 r/min
1,250 ~ 1,350 r/min (FZR600WC)



7. Adjust:
   - Carburetors synchronization

Adjustment steps:
- Lift up the front of fuel tank.
- Synchronize carburetor #1 to carburetor #2 by turning synchronizing screw ① until both gauges read the same.



- Racing the engine for less than a second, two or three times, and check the synchronization again.

Vacuum pressure at idle speed:
20.73 ~ 21.93 kPa
(155 ~ 165 mmHg, 6.10 ~ 6.50 inHg)
Vacuum synchronous difference:
1.33 kPa (10 mmHg, 0.4 inHg)

- Repeat the above.steps to synchronize carburetor #4 to carburetor #3 by turning synchronizing screw ② until both gauges read the same.
- Repeat the same steps to synchronize #2 carburetor to #3 carburetor by turning synchronizing screw ③ until both gauges read the same.

8. Adjust:
   - Idle speed
9. Install:
   - Vacuum plug
   - Fuel tank
   - Seat
   - Side cowlings

   Refer to "COWLINGS AND COVERS REMOVAL, AND INSTALLATION.

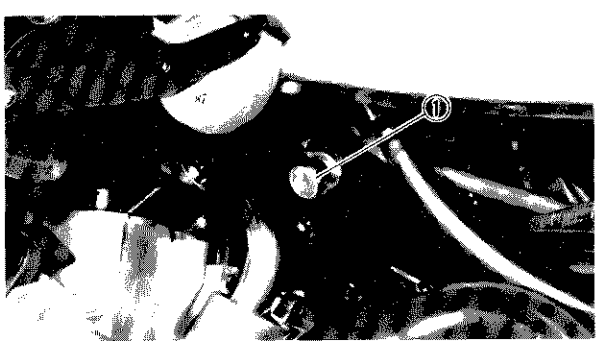
IDLE SPEED ADJUSTMENT

NOTE:
Before adjusting the idle speed, the carburetors synchronization should be adjusted.

1. Start the engine and let it warm up.
2. Inspect:
   - Idle speed

   Out of specification → Adjust.

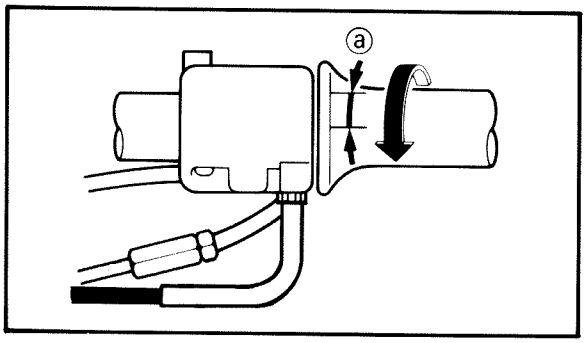
Idle speed:
1,150 ~ 1,250 r/min
1,250 ~ 1,350 r/min (FZR600WC)



3. Adjust:
   - Idle speed

   Turn the throttle stop screw ① .

Turn in	Engine speed is increased.
Turn out	Engine speed is decreased.



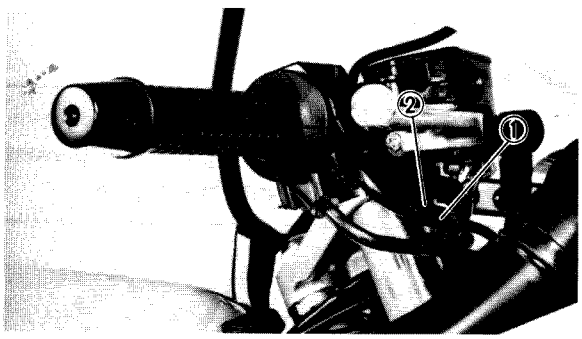
THROTTLE CABLE FREE PLAY ADJUSTMENT

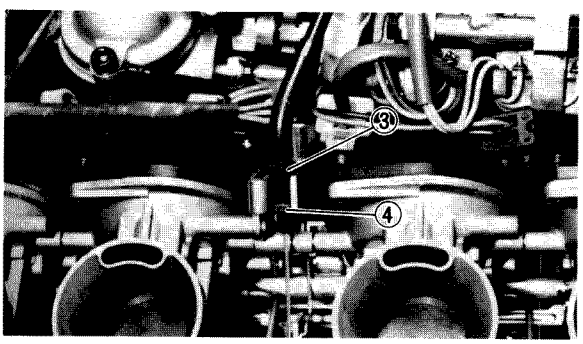
NOTE:

Before adjusting the throttle cable free play, the engine idle speed should be adjusted.

1. Check:
   - Throttle cable free play ⓐ
     Out of specification → Adjust.

Throttle cable free play (on grip flange)
3 ~ 7 mm (0.12 ~ 0.28 in)





2. Adjust:
   - Throttle cable free play

Adjustment steps:

First step:

- Remove the seat, top cover and air filter case.
- Make sure that the adjuster ① and locknut ② on the throttle housing side are fully tightened.
- Loosen the locknut ③ on the carburetor side.
- Turn the adjuster ④ in or out until the correct free play is obtained.

Turn in	**Free play is increased.**
Turn out	**Free play is decreased.**

- Tighten the locknut ③.

Second step:

- If the free play is incorrect, adjust the throttle cable free play with the adjuster (throttle grip side).
- Loosen the locknut ②.
- Turn the adjuster ① in or out until the correct free play is obtained.

Turn in	Free play is increased.
Turn out	Free play is decreased.

- Tighten the locknut ②.

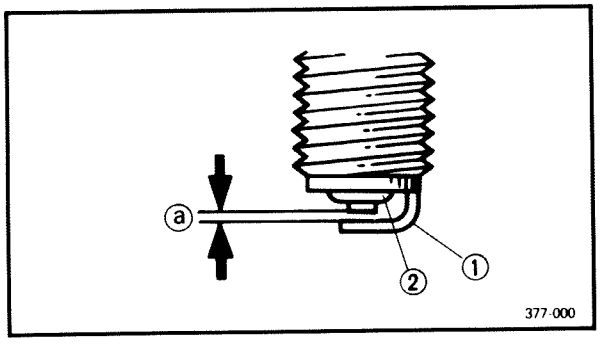
NOTE:
After adjusting the free play, turn the handlebar to right and left, and make sure that the engine idling does not run faster.

- Install the air filter case, fuel tank and seat.

SPARK PLUG INSPECTION

⚠ CAUTION:

Before completely removing plug, use compressed air to clean the setting areas to prevent dirt particles from falling into the engine.

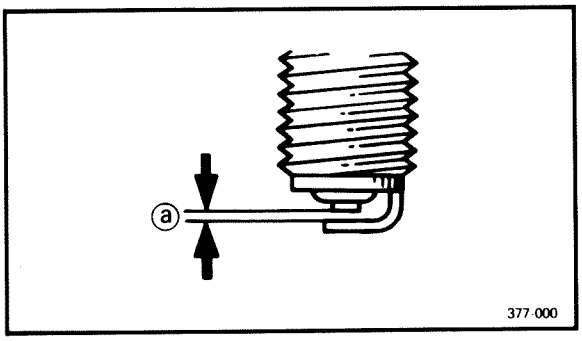


1. Inspect:
   - Electrode ①
     Wear/Damage → Replace.
   - Insulator color ②
     Normal condition is a medium to light tan color.
     Distinctly different color → Check the engine condition.

ⓐ Spark plug gap

2. Clean:
   - Spark plug
     Clean the spark plug with a spark plug cleaner or wire brush.
3. Inspect:
   - Spark plug type
     Incorrect → Replace.

Standard spark plug:
CR9E (NGK),
U-27ESR-N (NIPPON DENSO)



4. Measure:
   - Spark plug gap ⓐ
     Out of specification → Regap.
     Use a wire gauge.

Spark plug gap:
0.7 ~ 0.8 mm (0.028 ~ 0.032 in)

5. Tighten:
   - Spark plug

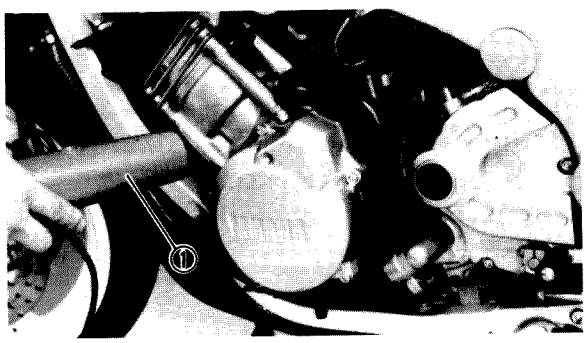
NOTE:
Before installing a spark plug, clean the gasket surface and plug surface.

Spark plug:
13 Nm (1.3 m · kg, 9.4 ft · lb)

NOTE:
If a torque wrench is not available when you are installing a spark plug, a good estimate of the correct torque is 1/4 to 1/2 turns part finger tight. Have the spark plug torqued to the correct value as soon as possible with a torque wrench.

IGNITION TIMING CHECK

1. Remove:
   - Side cowlings
     Refer to the "COWLING/COVERS REMOVAL AND INSTALLATION" section.
2. Remove:
   - Plug (Generator cover)



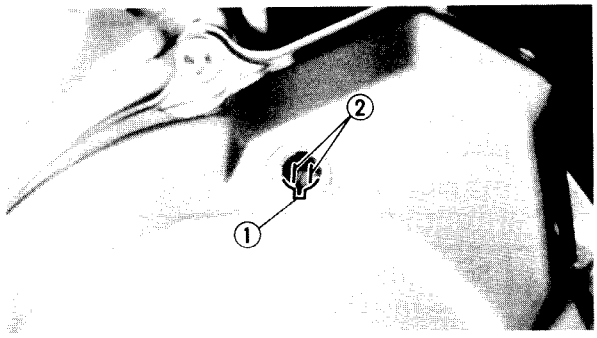
3. Correct:
   - Timing light ①
     To the #1 spark plug lead.
   - Inductive tachometer

Timing light:
P/N YU-33223
90890-03109

Inductive tachometer:
P/N YU-08036
90890-03113

4. Warm up the engine and allow it to idle at the specified speed.

	Engine idle speed: **1,150 ~ 1,250 r/min**



5. Check:
   - Ignition timing
     Visually check the stational pointer ① is within the firing range ② on the magneto.
     Out of firing range → Check pickup assembly.

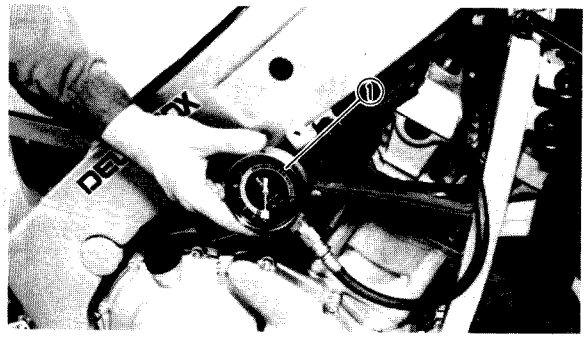
NOTE:
Ignition timing is not adjustable.

6. Install:
   - Generator cover

COMPRESSION PRESSURE MEASUREMENT

NOTE:
Insufficient compression pressure will result in performance loss.

1. Remove:
   - Side cowlings
     Refer to the "COWLING/COVERS REMOVAL AND INSTALLATION – REMOVAL" section.
2. Measure:
   - Valve clearance
     Out of specification → Adjust.
     Refer to the "VALVE CLEARANCE ADJUSTMENT" section.
3. Warm up the engine.
4. Remove:
   - Spark plugs



5. Measure:
   • Compression pressure

Measurement steps:
- Install the Compression Gauge ① using an adapter.
- Crank over the engine with the electric starter (be sure the battery is fully charged) with the throttle wide open until the compression reading on the gauge stabilizes.
- Check readings with specified levels (See chart).

Compression gauge:
P/N YU-33223
90890-03081

Comppression pressure (at sea level):
Standard:
1,100 kPa (11 kg/cm², 160 psi)
Minimum:
1,000 kPa (10 kg/cm², 145 psi)
Maximum:
1,150 kPa (11.5 kg/cm², 164 psi)

⚠ WARNING:

When cranking the engine, ground spark plug lead to prevent sparking.

- Repeat the previous steps for the other cylinders.
- If pressure falls bellow the minimum level:

1) Squirt a few drops of oil into the affected cylinder.
2) Measure the compression again.

Compression pressure (with oil introduced into cylinder)

Reading	Diagnosis
Higher than without oil	Worn or damaged pistons
Same as without oil	Defective ring(s), valves, cylinder head gasket or piston is possible.
Above maximum level	Inspect cylinder head, valve surfaces, or piston crown for carbon deposits.

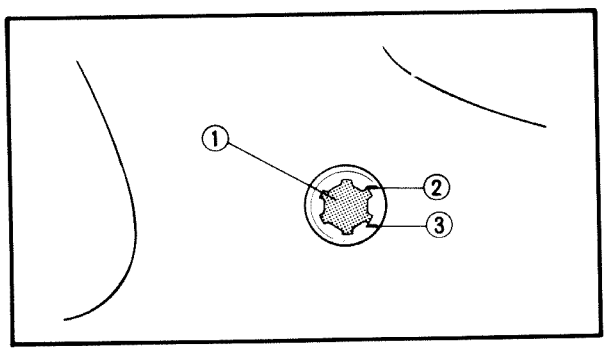
NOTE:
The difference between the highest and lowest cylinder compression readings must not vary more than the specified value.

Difference between each cylinder:
Less than 100 kPa (1 kg/cm², 15 psi)

ENGINE OIL LEVEL INSPECTION

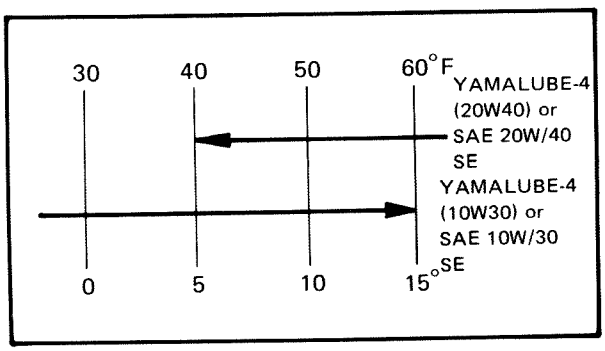
1. Place the motorcycle on its centerstand and warm up the engine for several minutes.

NOTE:
Position motorcycle straight up when checking oil level, a slight tilt to the side can produce false readings.



2. Stop the engine and visually check the oil level throught the level window ① .
3. Inspect:
   - Oil level
     Oil level should be between maximum ② and minimum ③ marks.
     Low oil level → Add oil to proper level.

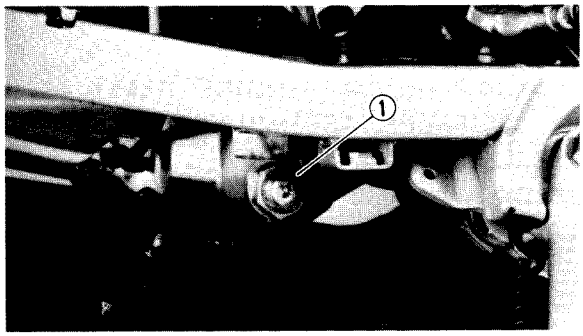
NOTE:
Wait a few minutes until level settles before inspecting.



Recommended engine oil:
At 5°C (40°F) or higher:
YAMALUBE-4 (20W40) or SAE 20W40 type SE motor oil
At 15°C (60°F) or lower:
YAMALUBE-4 (10W30) or SAE 10W30 type SE motor oil

ENGINE OIL REPLACEMENT

1. Remove:
   - Side cowlings
     Refer to the "COWLING REMOVAL, AND INSTALLATION" section.
2. Warm up the engine for several minutes.
3. Place a drain pan under the engine.
4. Remove:
   - Oil filler cap



5. Remove:
   - Drain plug ①

   Drain the engine oil.
6. Tighten:
   - Drain plug ①

Oil drain plug:
43 Nm (4.3 m · kg, 31 ft · lb)

7. Inspect:
   - O-ring (oil filler cap)
   - Gasket (drain plug)

   Damage → Replace.
8. Fill:
   - Crankcase

⚠ CAUTION:

- **Do not add any chemical additives. Engine oil also lubricates the clutch and additives could cause clutch slippage.**
- **Be sure no foreign material enters the crankcase.**

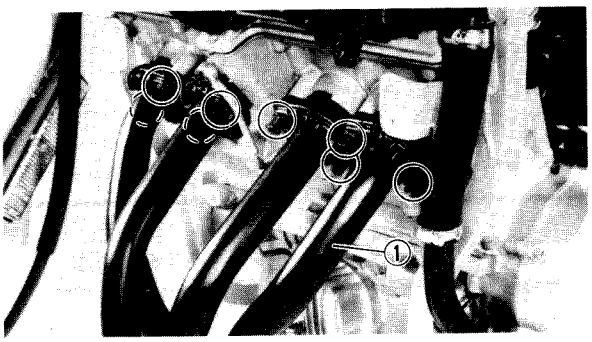
Periodic oil change:
2.2 L (1.9 Imp qt, 2.4 US qt)
Recommended engine oil:
At 5°C (40°F) or higher:
YAMALUBE-4 (20W40) or
SAE 20W40 type SE motor oil
At 15°C (60°F) or lower:
YAMALUBE-4 (10W30) or
SAE 10W30 type SE motor oil

9. Install:
   - Oil filler cap
   - Side cowlings

ENGINE OIL FILTER REPLACEMENT

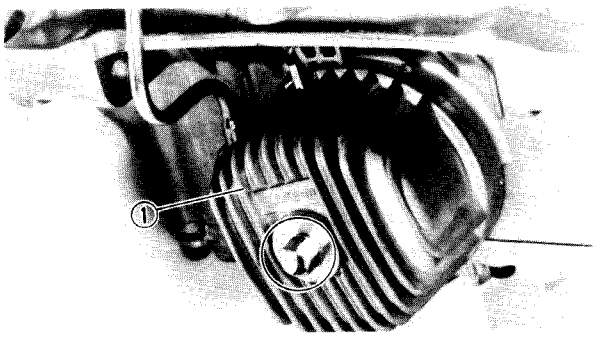
1. Remove:
   - Side cowlings

   Refer to the "COWLING/COVERS REMOVAL AND INSTALLATION" section.
2. Warm up the engine for several minutes.

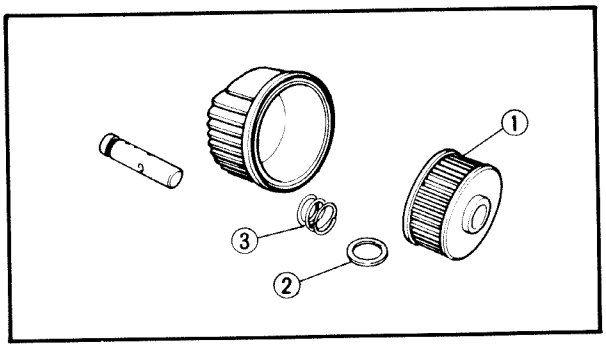


3. Remove:
   - Exhaust pipe ①

   Refer to the "ENGINE REMOVAL – MUFFLER ASSEMBLY" section in the CHAPTER 4.
4. Drain the oil.

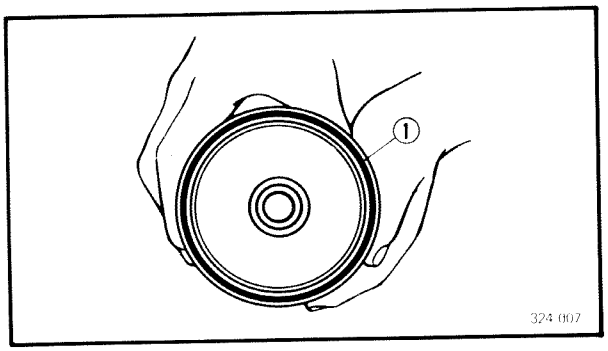


5. Remove:
   - Oil filler cap
   - Bolt
   - Filter cover ①



6. Remove:
   - Oil filter ①
   - Shim ②
   - Spring ③
7. Inspect:
   - O-ring

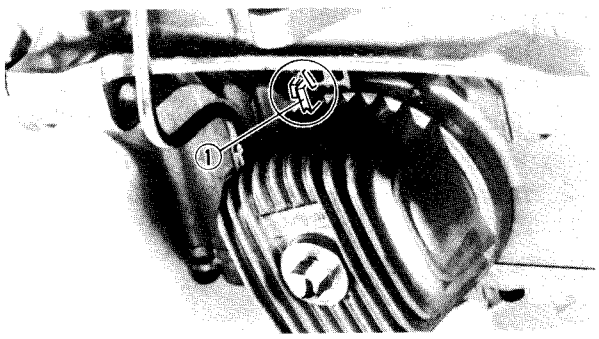
   Cracks/Damage → Replace.



8. Install:
   - O-ring (new) ①
   - Oil filter
   - Shim
   - Spring

   To oil filter cover.

NOTE:
Be sure the O-ring is positioned properly.



9. Install:
   - Oil filter cover

	Bolt (oil filter cover): **15 Nm (1.5 m · kg, 11 ft · lb)**

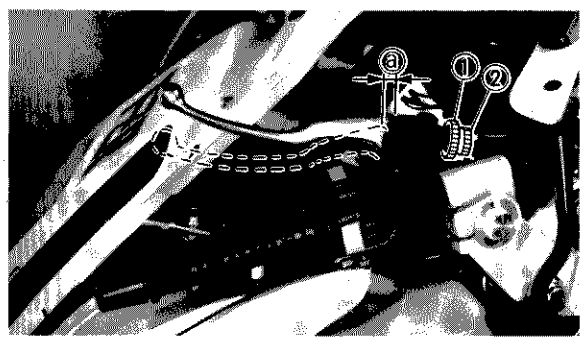
NOTE:
Mesh the oil filter cover projection ① with the crankcase slot.

10. Fill:
    - Crankcase

    Refer to "ENGINE OIL REPLACEMENT" Section for recommended engine oil.

	With oil filter replacement: **2.5 L (2.2 Imp qt, 2.64 US qt)**

11. Warm up the engine for a few minutes, then stop the engine.
12. Observe:
    - Oil level
13. Install:
    - Side cowlings



CLUTCH ADJUSTMENT

1. Check:
    - Clutch lever free play ⓐ

    Out of specification → Adjust.

	Free play: **2 ~ 3 mm (0.08 ~ 0.12 in)**

2. Adjust:
    - Clutch lever free play

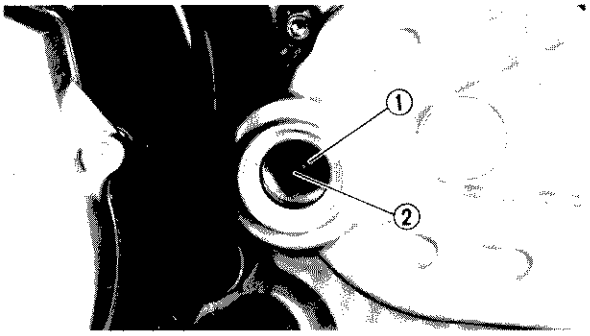
Adjustment steps:
- Loosen the locknut ①.
- Turn the adjuster ② in or out until the specified free play is obtained.

Turn in	**Free play is increased.**
Turn out	**Free play is decreased.**

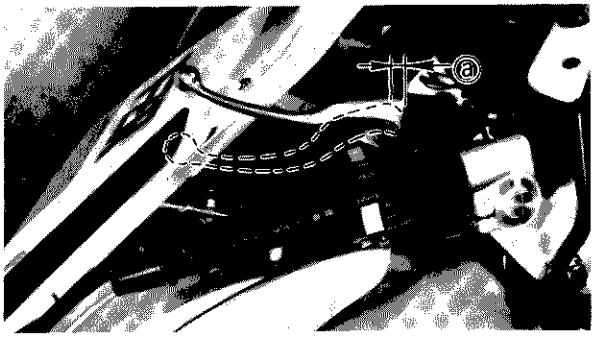
- Tighten the locknut.

NOTE:

Normally, once the clutch cable length adjuster (crankcase) is properly set; the only adjustment required is maintenance of free play at the clutch cable length adjuster (handlebar lever).

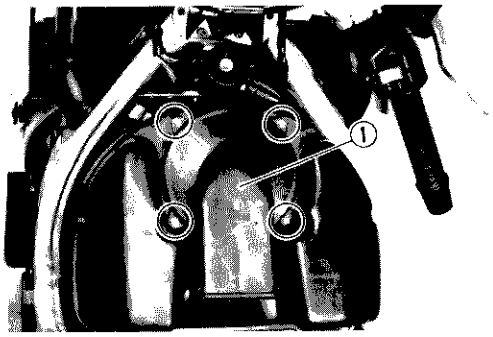


3. Remove:
   - Side cowlings
   - Cover
4. Loosen:
   - Locknut ①
5. Screw in adjuster ② until lightly tight and back it out 1/4 turn.
6. Tighten:
   - Locknut ①



7. Check:
   - Clutch lever free play ⓐ

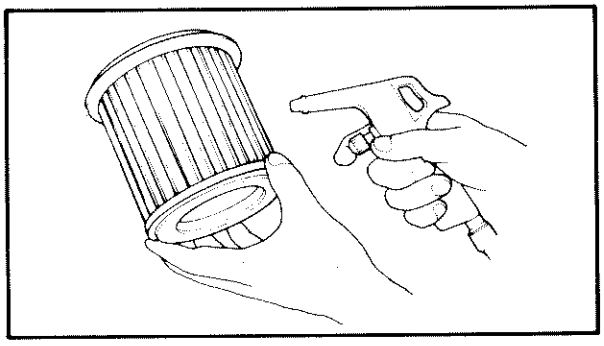
Free play:
2 ~ 3 mm (0.08 ~ 0.12 in)



AIR FILTER CLEANING

1. Remove:
   - Seat
   - Top cover

   Refer to the "COWLING/COVERS REMOVAL AND INSTALLATION" section.
2. Remove:
   - Air filter case cover ①
   - Air filter element



⚠ CAUTION:

The engine should never be run without the air/filter element installed; excessive piston and/or cylinder wear may result.

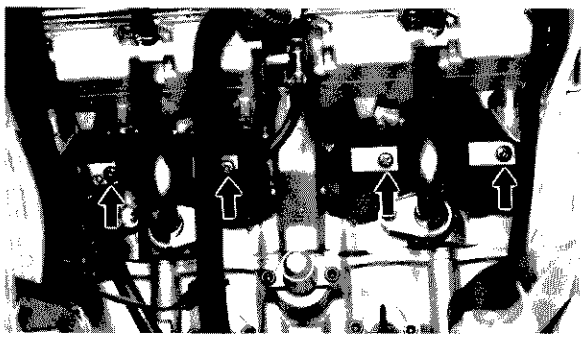
3. Clean:
   - Air filter element

   Blow out dust in the element from the outer surface using compressed air.
4. Inspect:
   - Air filter element

     Damage → Replace.
   - Sealing rubber

     Damage → Replace.
5. Install:
   - Air filter element
   - Air filter case cover
   - Top cover
   - Seat

NOTE:
When installing the element in its case, be sure its sealing surface matches the sealing surface on the case so there is no air leak.



CARBURETOR JOINT INSPECTION

1. Remove:
   - Fuel tank
   - Air filter case

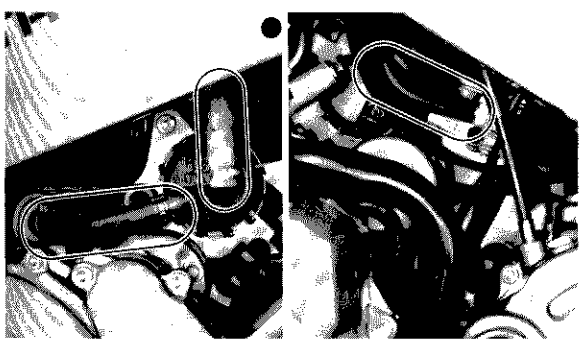
   Refer to the "CARBURETOR – REMOVAL" section in the CHAPTER 6.
2. Inspect:
   - Carburetor joint

   Cracks/Damage → Replace.

FUEL LINE INSPECTION

1. Remove:
   - Side cowlings

   Refer to the "COWLINGS/COVERS REMOVAL AND INSTALLATION" section.

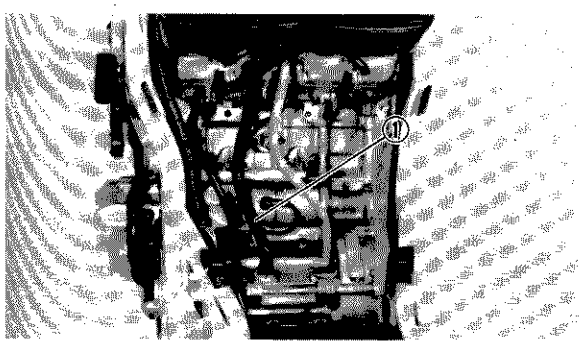


2. Inspect:
   - Fuel hoses

   Cracks/Damage → Replace.
   - Fuel filter

   Contamination/Damage → Replace.

NOTE:
Drain and flush the fuel tank if abrasive damage to any components is evident.

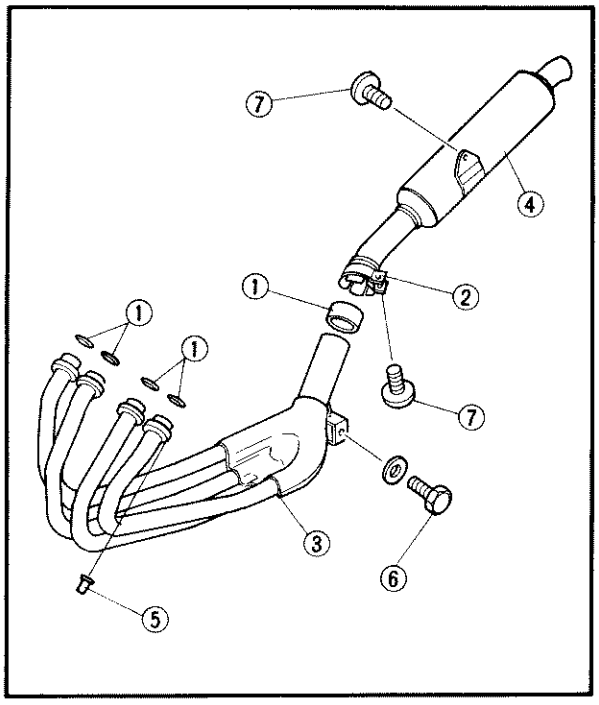


CRANKCASE VENTILATION HOSE INSPECTION

1. Remove:
   - Seat
   - Top cover

   Refer to the "COWLING/COVERS REMOVAL AND INSTALLATION – REMOVAL" section.
2. Inspect:
   - Crankcase ventilation hose ①

   Cracks/Damage → Replace.



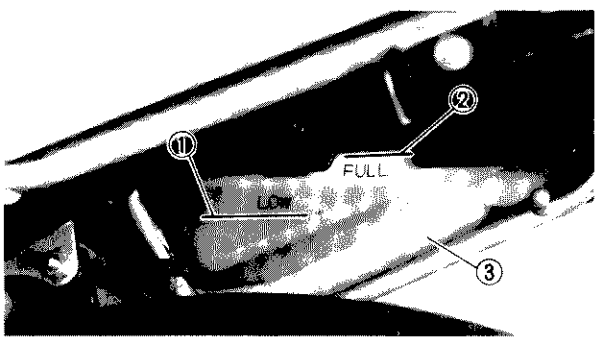
EXHAUST SYSTEM INSPECTION

1. Inspect:
   - Gasket (exhaust pipe) ①
   - Joint (silencer) ②
     Damage → Replace.
     Exhaust gas leakage → Repair.
   - Exhaust pipe ③
   - Silencer ④
     Cracked/Dent/Damage → Repair or replace.
2. Tighten:
   - Exhaust pipe
   - Muffler

Nut (exhaust pipe) ⑤ :
10 Nm (1.0 m · kg, 7.2 ft · lb)
Bolt (muffler stay) ⑥ :
20 Nm (2.0 m · kg, 14 ft · lb)
Exhaust pipe joint ⑦ :
20 Nm (2.0 m · kg, 14 ft · lb)

COOLANT LEVEL INSPECTION

1. Remove:
   - Seat
   - Side cover (right)
     Refer to the "COWLINGS/COVERS REMOVAL AND INSTALLATION" section.



2. Inspect:
   - Coolant level
     Coolant level is under "LOW" level line ① → Add soft water (tap water).

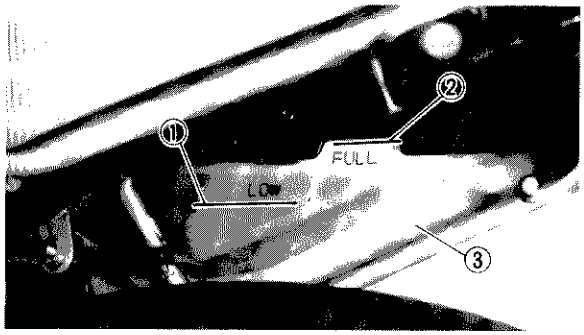
② "FULL" level
③ Coolant reservoir tank

⚠ WARNING:

Do not remove the radiator cap when the engine is hot.

⚠ CAUTION:

Hard water or salt water is harmful to the engine parts; use boiled or distilled water if you can't get soft water.



3. Add:
   - Soft water (tap water)

   Until the coolant level reaches "FULL" Level line ③ .

Reservoir tank capacity:
Total:
0.28 L (0.25 Imp qt, 0.30 US qt)
From "LOW" to "FULL" level:
0.18 L (0.16 Imp qt, 0.19 US qt)

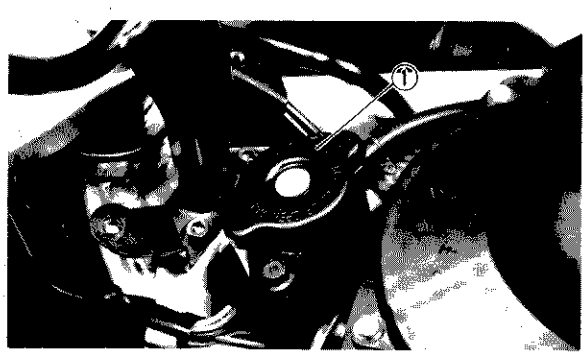
4. Install:
   - Side cover (right)
   - Seat

   Refer to the "COWLINGS/COVERS REMOVAL AND INSTALLATION" section.

COOLANT REPLACEMENT

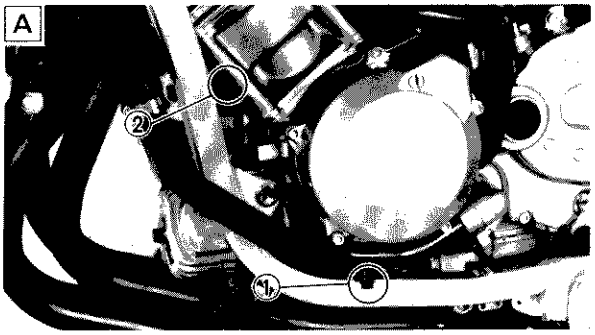
⚠ WARNING:

Do not remove the radiator cap when the engine and radiator are hot. Scalding hot fluid and steam may be blown out under pressure, which could cause serious injury. When the engine has cooled, open the radiator cap by the following procedure:
Place a thick rag, like a towel, over the radiator cap, slowly rotate the cap counterclockwise to the detent. This procedure allows any residual pressure to escape. When the hissing sound has stopped, press down on the cap.while turning counterclockwise and remove it.

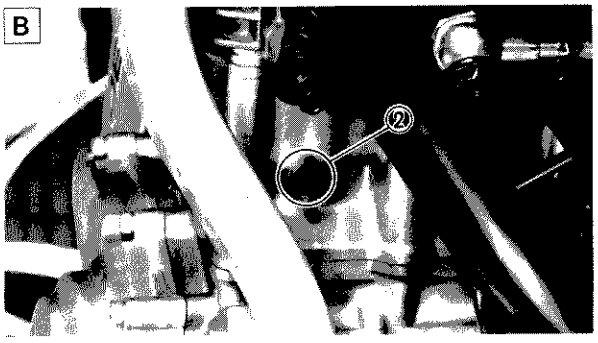


1. Remove:
   - Side cowlings (left and right)
   - Top cover

   Refer to the "COWLINGS/COVERS REMOVAL AND INSTALLATION" section.
2. Remove:
   - Radiator cap ①



3. Place a drain pan under the drain bolts.
4. Remove:
   - Drain bolt (outlet pipe) ①



5. Remove:
   - Drain bolt (cylinder) ②

   Drain the coolant.

A LEFT B Right

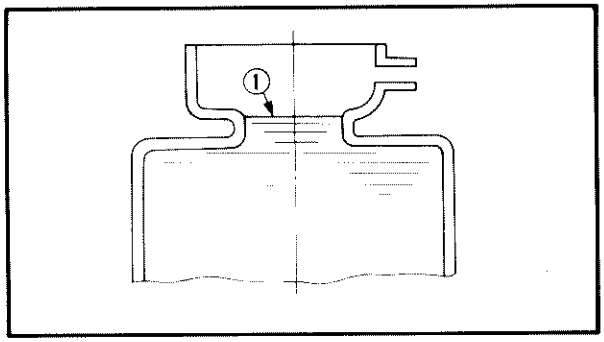
NOTE:

Remove the drain bolts first, then remove the radiator cap to prevent the coolant spilling.

6. Inspect:
   - Gasket (drain bolts – cylinder)
   - Gasket (drain bolt – outlet pipe)

   Damage → Replace.
7. Tighten:
   - Drain bolts

	Drain bolt: **10 Nm (1.0 m · kg, 7.2 kg · in)**



8. Fill:
   - Cooling system

Coolant filling steps:
- Fill the coolant into the radiator until the radiator is full.
- Start the engine (coolant level decreases).

⚠ CAUTION:

Always check coolant level, and check for coolant leakage before starting engine.

- Add the coolant while engine is running.
- Stop the engine when coolant level stabilizes.
- Add the coolant again to specified level ① .
- Install the radiator cap.

Recommended coolant:
High quality ethylene glycol anti-freeze containing anti-corrosion for aluminum engine inhibitors

Coolant and water mixed ratio:
50%/50%

Total amount:
2.2 L (1.9 Imp qt, 2.3 US qt)

Reservoir tank capacity:
0.28 L (0.25 Imp qt, 0.30 US qt)

From "LOW" to "FULL" level:
0.18 L (0.16 Imp qt, 0.19 US qt)

Handling notes of coolant:
The coolant is harmful so it should be handled with special care.

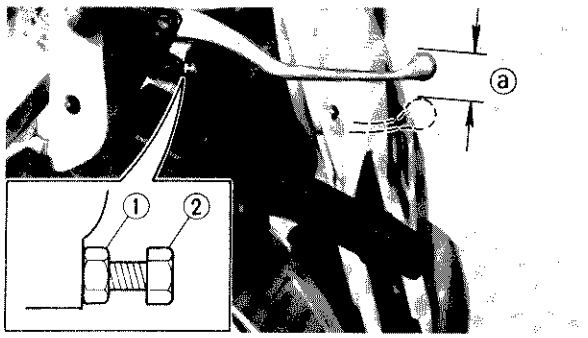
⚠ WARNING:

- When coolant splashes to your eye.
  Thoroughly wash your eye with water and see your doctor.
- When coolant splashes to your clothes.
  Quickly wash it away with water and then with soap.
- When coolant is swallowed.
  Quickly make him vomit and take him to a doctor.

⚠ CAUTION:

- Hard water or salt water is harmful to the engine parts; use boiled or distilled water if you can't get soft water.
- Do not use water containing impurities or oil.
- Take care so that coolant does not splash to painted surfaces. If splashes, wash it away with water.

9. Install:
   - Inner cover (right)
   - Air intake duct (right)
   - Front cover
   - Side cowlings (left and right)
     Refer to the "COWLINGS/COVERS REMOVAL AND INSTALLATION" section.



CHASSIS

FRONT BRAKE ADJUSTMENT

1. Check:
   - Brake level free play ⓐ
     Out of specification → Adjust.

Free play:
2 ~ 5 mm (0.08 ~ 0.20 in)

2. Adjust:
   - Brake lever free play

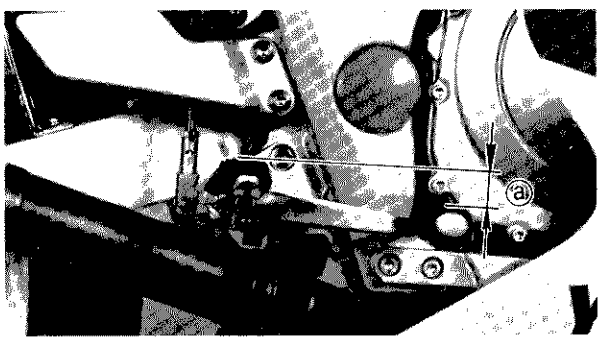
Adjustment steps:
- Loosen the locknut ① .
- Turn the adjuster ② in or out until the specified free play is obtained.

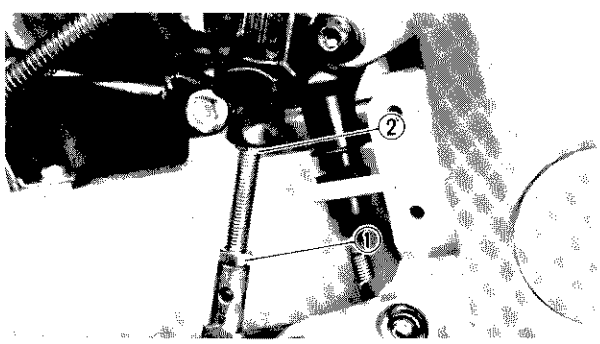
Turn in	**Free play is decreased.**
Turn out	**Free play is increased.**

- Tighten the locknut.

⚠CAUTION:

Proper lever free play is essential to avoid excessive brake drag.





REAR BRAKE ADJUSTMENT

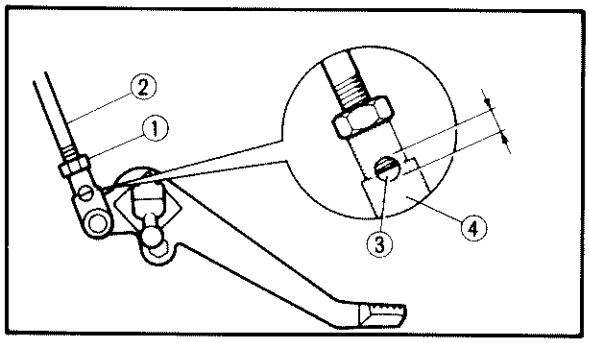
1. Check:
   - Brake pedal height ⓐ
     Out of specification → Adjust.

Brake pedal height:
44 mm (1.70 in)
Below top of footrest.

2. Adjust:
   - Brake pedal height

Adjustment steps:
- Loosen the locknut ①
- Turn the adjuster ② in or out until the specified pedal height is obtained.

Turn in	**Pedal height is increased.**
Turn out	**Pedal height is decreased.**

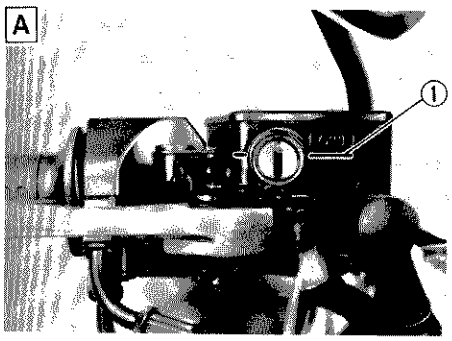


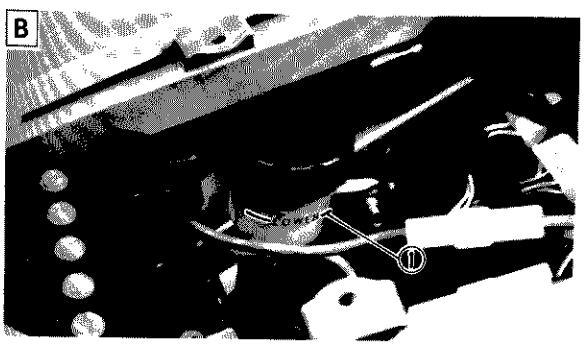
⚠ WARNING:

After adjusting the brake pedal height, visually check the adjuster end through the hole ③ of the joint holder ④ . The adjuster end must appear within this hole.

- Tighten the locknut ① .

Locknut:
26 Nm (2.6 m · kg, 19 ft · lb)





BRAKE FLUID INSPECTION

1. Place the motorcycle on a level surface.
2. Inspect:
   - Brake fluid level
     Fluid level is under "LOWER" level line ① → Replenish.

Recommended brake fluid:
Front brake:
DOT #4 only
Rear brake:
DOT #4
(If DOT #4 is not available, #3 can be used.)

A Front brake B Rear brake

NOTE:

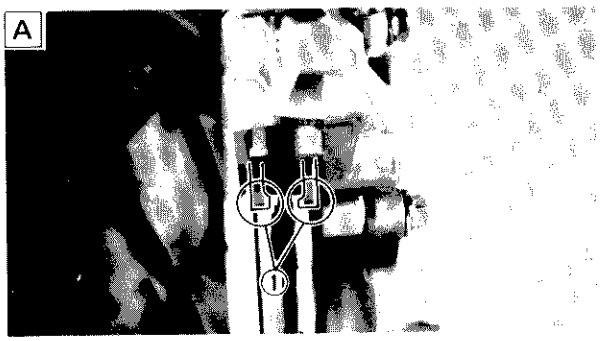
- Position the motorcycle straight up when inspecting the brake fluid level.
- When inspecting the front brake fluid level, make sure the master cylinder top is horizontal by turning the handlebars.
- Before inspecting the rear brake fluid level, remove the side cover (right).

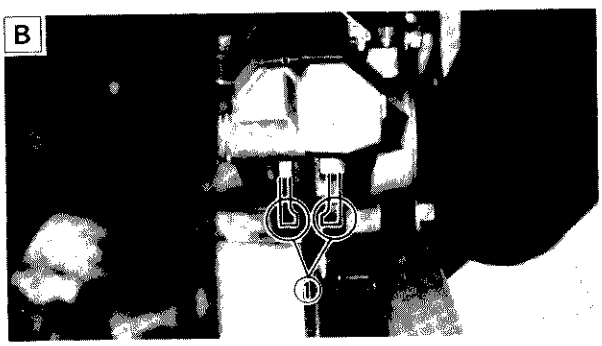
⚠ CAUTION:

Brake fluid may erode painted surface or plastic parts. Always clean up spilled fluid immediately.

⚠ WARNING:

- **Use only the designated quality brake fluid: otherwise, the rubber seals may deteriorate, causing leakage and poor brake performance.**
- **Refill with the same type of brake fluid; mixing fluids may result in a harmful chemical reaction and lead to poor performance.**
- **Be careful that water does not enter the master cylinder when refilling. Water will significantly lower the boiling point of the fluid and may result in vapor lock.**





BRAKE PAD INSPECTION

1. Activate the brake lever or brake pedal.
2. Inspect:
   - Brake pad

     Wear indicator ① almost contacts brake disc → Replace brake pad as a set.

     Refer to "BRAKE PAD REPLACEMENT" section in the CHAPTER 7 for replacement.

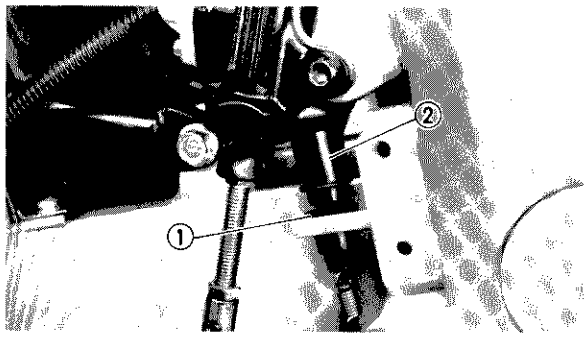
[A] Front brake
[B] Rear brake

BRAKE LIGHT SWITCH ADJUSTMENT

NOTE:

The brake light switch is operated by movement of the brake pedal.

Proper adjustment is achieved when the brake light comes on just before the brake begins to take effect.



1. Loosen:
   - Locknut ①
2. Adjust:
   - Rear brake light switch
     Hold the switch body ② with your hand so it does not rotate and turn the adjuster.

NOTE:
Proper adjustment is achieved when the brake light comes on just before the brake begins to take effect.

3. Tighten:
   - Locknut

BRAKE HOSE INSPECTION

1. Inspect:
   - Brake hoses
     Cracks/Wear/Damage → Replace.

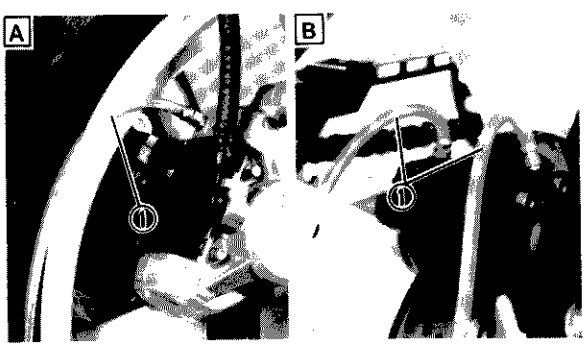
[A] Front brake
[B] Rear brake

AIR BLEEDING

⚠ WARNING:

Bleed the brake system if:
- **The system has been disassembled.**
- **A brake hose has been loosened or removed.**
- **The brake fluid is very low.**
- **The brake operation is faulty.**

A dangerous loss of braking performance may occur if the brake system is not properly bled.



1. Bleed:
   - Brake system

Air bleeding steps:
a. Add proper brake fluid to the reservoir.
b. Install the diaphragm. Be careful not to spill any fluid or allow the reservoir to overflow.
c. Connect the clear plastic tube ① tightly to the caliper bleed screw.

[A] Front
[B] Rear

d. Place the other end of the tube into a container.
e. Slowly apply the brake lever or pedal several times.
f. Pull the lever in or push down on the pedal. Hold the lever or pedal in position.
g. Loosen the bleed screw and allow the lever or pedal to travel towards its limit.
h. Tighten the bleed screw when the lever or pedal limit has been reached; then release the lever or pedal.

Bleed screw:
6 Nm (0.6 m · kg, 4.3 ft · lb)

i. Repeat steps (e) to (h) until of the air bubbles have been removed from the system.

NOTE:
If the bleeding is difficult, it may be necessary to let the brake fluid system stabilize for a few hours. Repeat the bleeding procedure when the tiny bubbles in the system have disappeared.

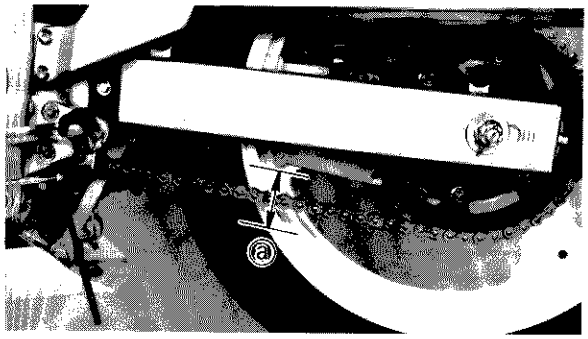
j. Add brake fluid to the level line on the reservoir.

DRIVE CHAIN SLACK ADJUSTMENT

NOTE:
Before checking and/or adjusting the chain slack, rotate the rear wheel through several revolutions. Check the chain slack several times to find the point where the chain is the tightest. Check and/or adjust the chain slack where the rear wheel is in this "tight chain" position.

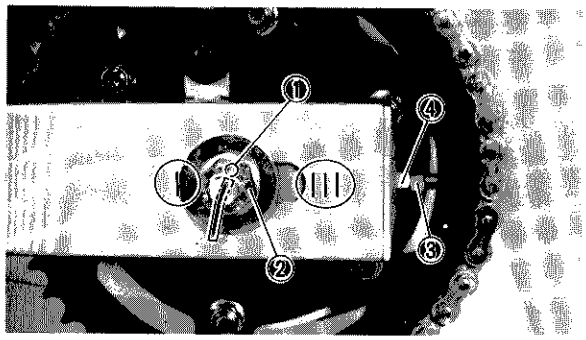
1. Place the motorcycle on a level place, and hold it in an upright position.

NOTE:
The both wheels on the ground without rider on it.



2. Measure:
- Drive chain slack ⓐ
  Out of specification → Adjust.

Drive chain slack:
20 ~ 30 mm (0.8 ~ 1.2 in)



3. Adjust:
- Drive chain slack

Adjustment steps:

⚠ CAUTION:

Too small chain slack will overload the engine and over vital parts; keep the slack within the specified limits.

- Remove the cotter pin ①.
- Loosen the axle nut ②.
- Loosen the both locknuts ③.
- Turn the adjuster ④ clockwise, or counter-clockwise and push the rear wheel forward until the specified slack is obtained.

Turning clockwise	**Slack is increased.**
Turning counter-clockwise and pushing rear wheel	**Slack is decreased.**

NOTE:

Turn each adjuster exactly the same amount to maintain.correct axle alignment. (There are marks on each side of swingarm; use them to check for proper alignment.)

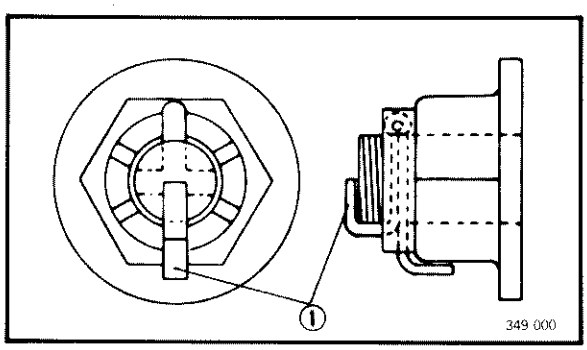
- Tighten the locknut.
- Tighten the axle nut to specification, while pushing up or down the chain to be tight.

Axle nut:
107 Nm (10.7 m · kg, 77 ft · lb)

- Install the cotter pin ①.

⚠ WARNING:

Always use a new cotter pin on the axle nut.



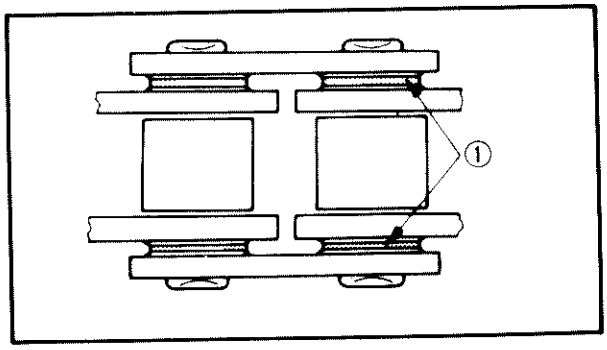
⚠CAUTION:

Do not loosen the axle nut after torque tightening. If the axle nut groove is not aligned with the cotter pin hole, align groove with the hole by tightening up on the axle nut.

DRIVE CHAIN LUBRICATION

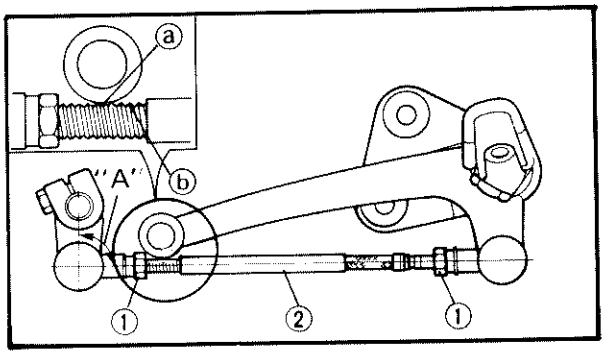
The chain consists of many parts which work against each other. If the chain is not maintained properly, it will wear out rapidly, therefore, form the habit of periodically servicing the chain. This service is especially necessary when riding in dusty conditions.

This motorcycle has a drive chain with small rubber O-rings between the chain plates. Steam cleaning, high-pressure washes, and certain solvents can damage these O-rings. Use only kerosene to clean the drive chain. Wipe it dry, and thoroughly lubricate it with SAE 30~50W motor oil. Do not use any other lubricants on the drive chain. They may contain solvents that could damage the O-rings.



Recommended lubricant:
SAE30 ~ 50 motor oil

① O-ring



CHANGE PEDAL ADJUSTMENT

1. Check:
   - Change pedal position

   While looking at the side view, the bottom ⓐ of the change pedal cover should be even with the top ⓑ of the thread area of the shift rod.

   (Also, angle "A" will be approximately 90°)

   Not even → Adjust.
2. Adjust:
   - Change pedal position

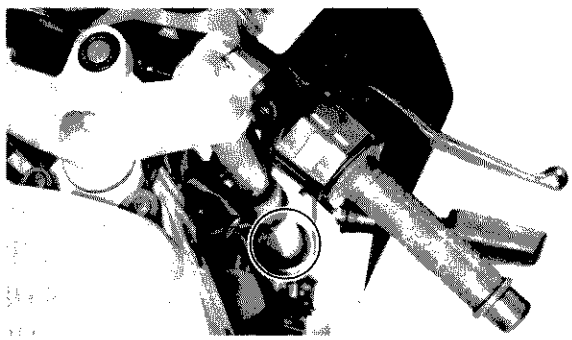
Adjustment steps:
- Loosen both locknuts ① .
- Turn shift arm ② in or out until adjustment is suitable.
- Tighten the both locknuts.

FRONT FORK INSPECTION

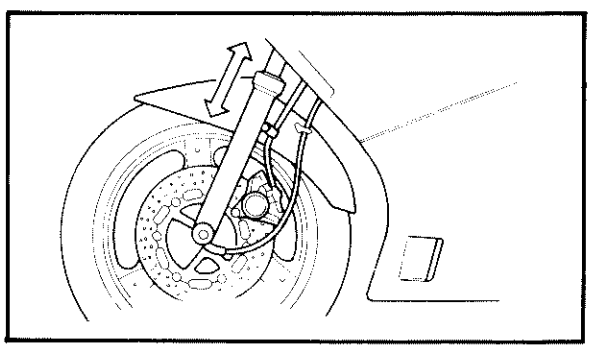
⚠ WARNING:

Securely support the motorcycle so there is no danger of it falling over.

1. Place the motorcycle on a level place.



2. Check:
   - Inner tube
     Scratch/Damage → Replace.
   - Oil seal
     Excessive oil leakage → Replace.
3. Hold the motorcycle on upright position and apply the front brake.



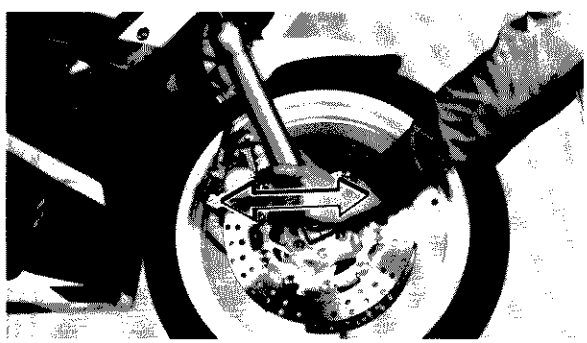
4. Check:
   - Operation
     Pump the front fork up and down for several times.
     Unsmooth operation → Repair.

STEERING HEAD INSPECTION

⚠ WARNING:

Securely support the motorcycle so there is no danger of it falling over.

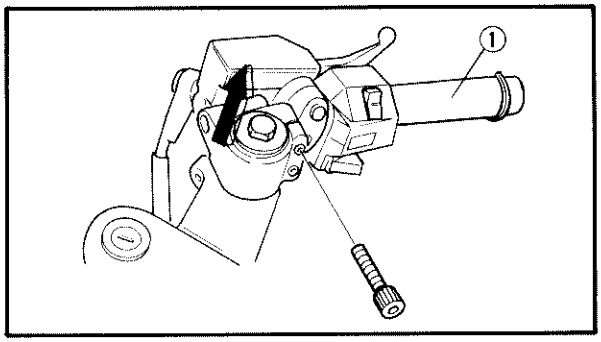
1. Place the motorcycle on a level place.
2. Elevate the front wheel by placing a suitable stand under the engine.



3. Check:
   - Steering assembly bearings
     Grasp the bottom of the front forks and gently rock the fork assembly back and forth.
     Looseness → Adjust the steering head.

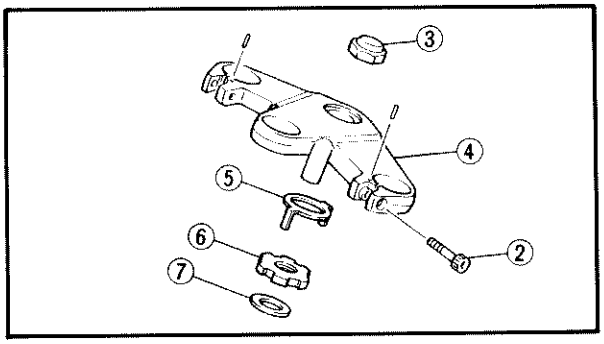
4. Remove:
   - Rear view mirrors (left and right)
   - Stay (upper cowling)
   - Top cover

   Refer to "COWLINGS/COVERS REMOVAL AND INSTALLATION."



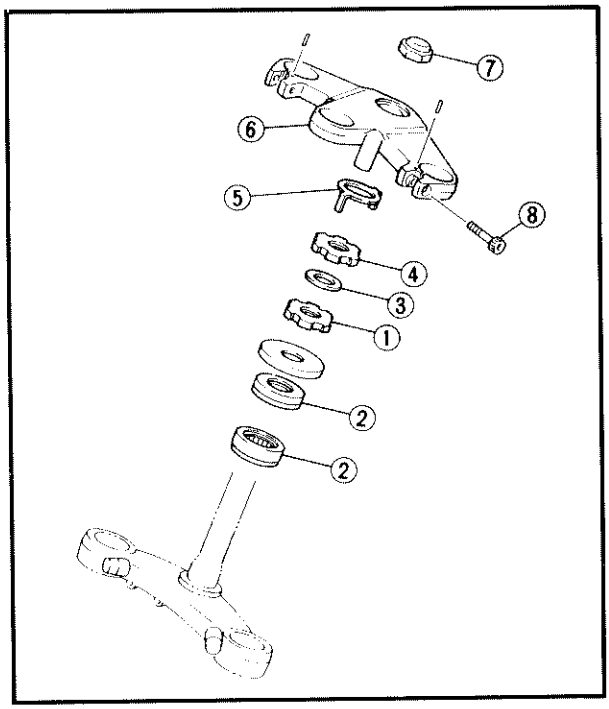
5. Remove:
   - Handlebar ①

   From front fork.



6. Loosen:
   - Pinch bolt (handle crown) ②

7. Remove:
   - Steering stem nut ③
   - Handle crown ④
   - Lock washer ⑤
   - Ring nut (upper) ⑥
   - Washer (rubber) ⑦



8. Tighten:
   - Ring nuts (lower and upper)

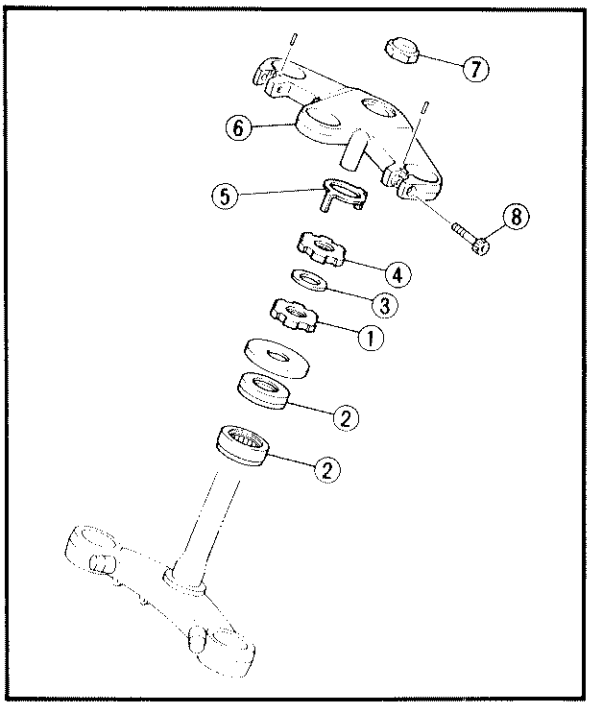
Ring nuts tightening steps:

NOTE:
Set the Torque Wrench to the Ring Nut Wrench so that they form a right angle.

- Loosen the ring nut (lower) ① .

NOTE:
The tapered side of ring nut must faced downward.

- Tighten the ring nut (lower) ① using the ring nut wrench.



Ring nut wrench:
YU-33975
90890-01403

Ring nut (lower) ①
(initial tightening):
52 Nm (5.2 m · kg, 37 ft · lb)

- Loosen the ring nut ① completely and retighten it to specification.

⚠ WARNING:

Do not over-tightening.

Ring nut (lower) ① (final tightening):
3 Nm (0.3 m · kg, 2.2 ft · lb)

- Check the steering stem by turning it lock to lock. If there is any binding, remove the steering stem assembly and inspect the steering bearings ② .
  Refer to "STEERING HEAD" section in the CHAPTER 7 for more details.
- Install the washer (rubber) ③ .
- Install the ring nut (upper) ④ .

NOTE:
The tapered side of ring nut must face downward.

- Finger tighten the ring nut ④ , then align the slots of both ring nuts. If not aligned, hold the ring nut (lower) ① and tighten the other until they are aligned.
- Install the lock washer ⑤ .

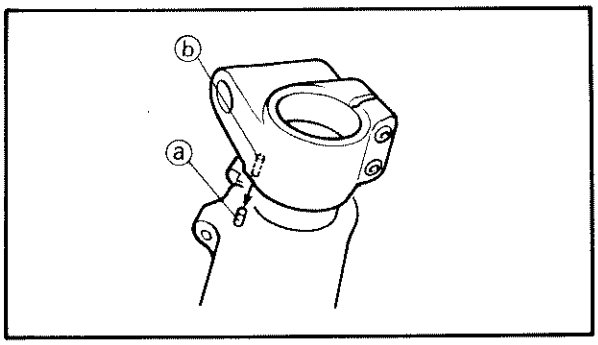
NOTE:
Make sure the lock washer tab is placed in the slots.

- Install the handlebar crown ⑥ and tighten the steering stem not ⑦ to specification.

Nut (steering stem):
110 Nm (11.0 m · kg, 80 ft · lb)

- Tighten the pinch bolts ⑧ to specification.

Pinch bolt (handle crown):
26 Nm (2.6 m · kg, 19 ft · lb)

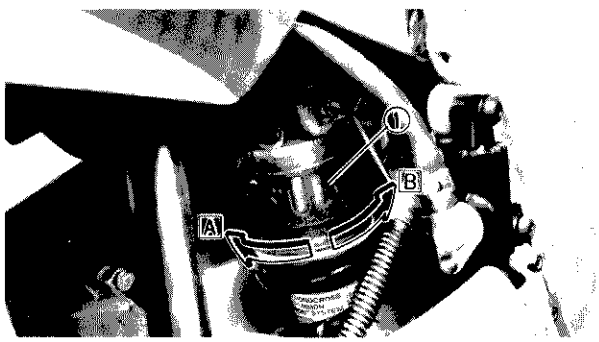


9. Install:
   - Handlebar

	Bolt (handlebar): **20 Nm (2.0 m · kg, 14 ft · lb)**

NOTE:
Align the projection ⓐ with the hole ⓑ.

10. Install:
    - Blind plugs
    - Stay (upper cowling)
    - Rear view mirrors (left and right)



REAR SHOCK ABSORBER ADJUSTMENT

1. Adjust:
   - Spring preload

Adjustment steps:
- Turn the adjuster ① to direction A or B. (Use special wrench included in tool kit)

⚠ WARNING:

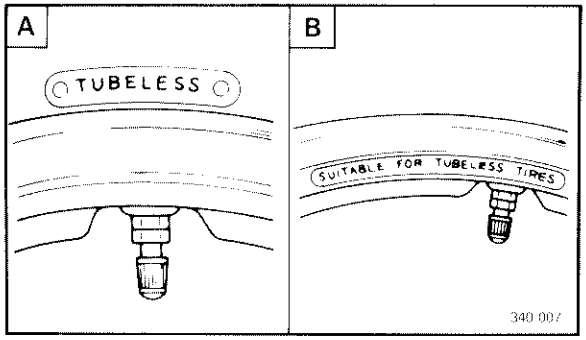
Securely support the motorcycle so there is no danger of it falling over.

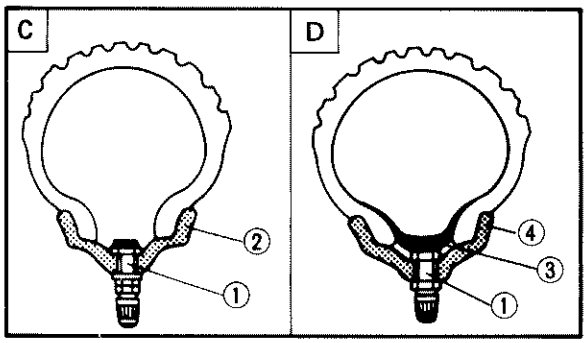
Turning in A	**Preload is increased.**
Turning out B	**Preload is decreased.**

	HARD				STD	SOFT	
ADJUSTMENT POSITION	7	6	5	4	3	2	1

⚠ CAUTION:

Never attempt to turn the adjuster beyond the maximum or minimum setting.



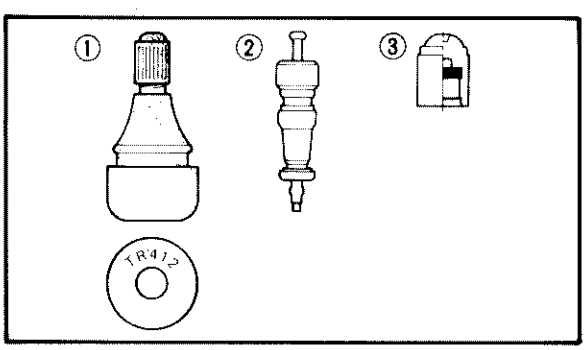


FRONT:

Manufacture	Size	Type
Bridgestone	110/70V17-V240	G549
Dunlop	110/70V17-V240	K275F

REAR:

Manufacture	Size	Type
Bridgestone	130/70V18-V240	G550
Dunlop	130/70V18-V240	K275



TIRE INSPECTION

⚠ WARNING:

- Do not attempt to use tubeless tires on a wheel designed for tube type tires only. Tire failure and personal injury may result from sudden deflation.

Wheel	Tire
Tube type	Tube type only
Tubeless type	Tube type or tubeless type

- Be sure to install the correct tube when using tube type tires.

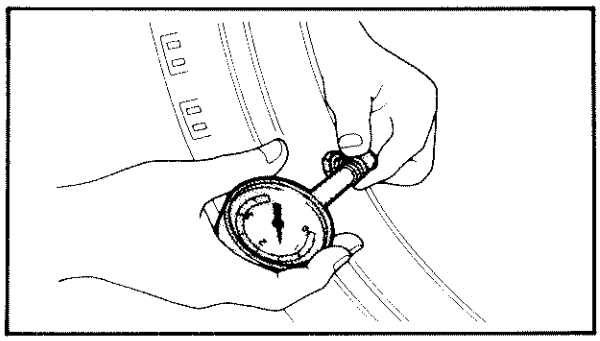
A Tire
B Wheel
C Tubeless tire
D Tube type tire
1 Air valve
2 Aluminum wheel (tubeless type)
3 Tube
4 Aluminum wheel (tube type)

⚠ WARNING:

- After extensive tests, the tires mentioned have been approved by Yamaha motor Co., Ltd. for this model. No guarantee for handling characteristics can be given if tire combinations other than what is approved are used on this motorcycle.
  The front and rear tires should be of the same manufacture and design.
- The use of tire valves and valve cores other than listed could cause tire deflation during extreme high speed riding. Always use genuine parts or their equivalent for replacement.
- Be sure to install the valve caps securely, as these are important to prevent air pressure leakage during extreme high speed riding.

1 Tire valve (TR412)
2 Valve core #9000A (genuine)
3 Valve cap with seal

	Type
Tire valve	TR412
Valve core	#9000A (genuine)

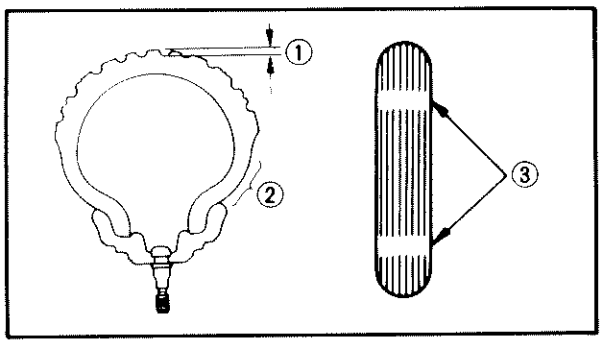


1. Measure:
   - Tire pressure

   Out of specification → Adjust.

Basic weight: With oil and full fuel tank	201 kg (443 lb)	
Maximum load *	159 kg (351 lb) 154 kg (340 lb) (FZR600WC)	
Cold tire pressure	Front	Rear
Up to 90 kg (198 lb) load	230 kPa (2.3 kg/cm², 33 psi)	250 kPa (2.5 kg/cm², 36 psi)
90 kg (198 lb) ~ Maximum load *	250 kPa (2.5 kg/cm², (36 psi)	290 kPa (2.9 kg/cm², 42 psi)
High speed riding	250 kPa (2.5 kg/cm², 36 psi)	290 kPa (2.9 kg/cm², 42 psi)

*Load is the total weight of cargo, rider, passenger, and accessories.



2. Inspect:
   - Tire surfaces

   Wear/Damage → Replace

Minimum tire tread depth (Front and Rear): 1.0 mm (0.04 in)

① Tread depth
② Side wall
③ Wear indicator

WHEEL INSPECTION

1. Inspect:
   - Aluminum wheels

   Damage/Bends → Replace.

NOTE:

Always balance the wheel when a tire or wheel has been changed or replaced.

⚠ WARNING:

Never attempt even small repairs to the wheel.

CABLE INSPECTION

⚠ WARNING:

Damage cable sheath may cause corrosion and interfere with the cable movement. An unsafe condition may result so replace such cable as soon as possible.

1. Inspect:
   - Cable sheath
   - Cables (throttle, clutch and starter)
     Damage → Replace.

LUBRICATION

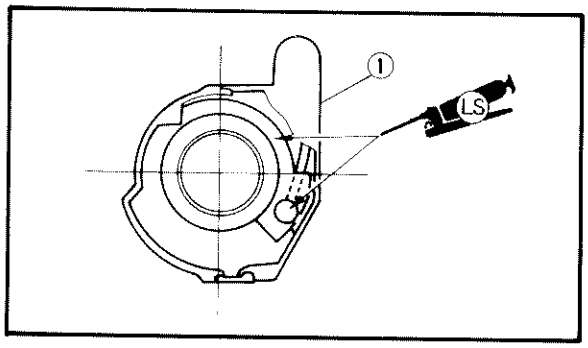
Cables

1. Check:
   - Cable operation
     Unsmooth operation → Lubricate.

Recommended lubricant:
SAE 10W30 motor oil

NOTE:

Hold cable end high and apply several drops of lubricant to cable.



2. Apply the grease to the throttle cable end and cable guide groove at inside of throttle housing ①.

Lithium soap base grease

Lever/Pedal

1. Lubricate the pivoting parts of the each lever and pedal.

Recommended lubricant:
SAE 10W30 motor oil

Sidestand

1. Lubricate the pivoting parts.

Recommended lubricant:
SAE 10W30 motor oil

Rear suspension

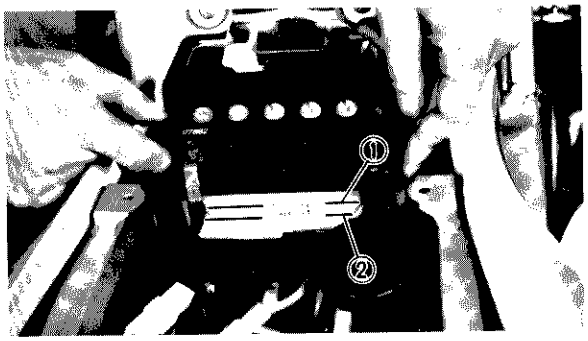
1. Lubricate the pivoting parts.

Recommended lubricant:
Lithium-soap base grease

ELECTRICAL

BATTERY INSPECTION

1. Remove:
   - Seat



2. Inspect:
   - Fluid level

   Fluid level should be between upper ① and lower ② marks.
   Incorrect → Refill.

⚠ CAUTION:

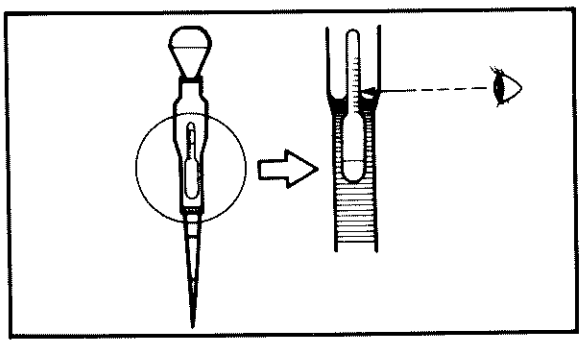
Refill with distilles water only; tap water contains minerals harmful to a battery.

3. Inspect:
   - Battery terminal

   Dirty terminal → Clean with wire brush.
   Poor connection → Correct.

NOTE:

After cleaning the terminals, apply grease lightly to the terminals.



4. Check:
   - Specific gravity:

   Less than 1.280 → Recharge battery.

Charging current:
1.2 amps/10 hrs
Specific gravity:
1.280 at 20°C (68°F)

Replace the battery if:
- Battery voltage will not rise to a specific value or bubbles fail to rise even after many hours of charging.
- Sulfation of one or more cells occurs, as indicated by the plates turning white, or an accumulation of material exists in the bottom of the cell.

- Specific gravity readings after a long, slow charge indicate one cell to be lower than the rest.
- Warpage or buckling of plates or insulators is evident.

⚠ CAUTION:

Always charge a new battery before using it to ensure maximum performance.

⚠ WARNING:

Battery electrolyte is dangerous; it contains sulfuric acid and therefore is poisonous and highly caustic.

Always follow these preventive measures:

- Avoid bodily contact with electrolyte as it can cause servere burns or permanent eye injury.
- Wear protective eye gear when handling or working near batteries.

Antidote (EXTERNAL):

- SKIN – Flush with water.
- EYES – Flush with water for 15 minutes and get immediate medical attention.

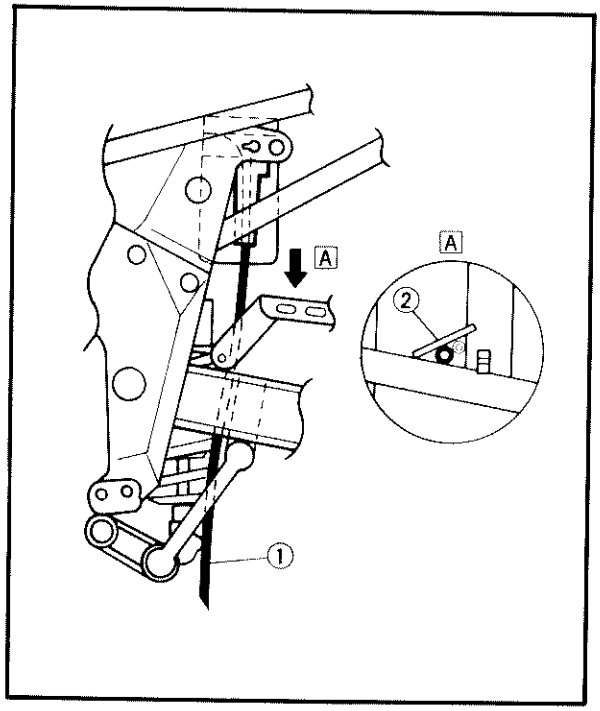
Antidote (INTERNAL):

- Drink large quantities of water or milk follow with milk of magnesia, beaten egg, or vegetable oil. Get immediate medical attention.

Batteries also generate explosive hydrogen gas, therefore you should always follow these preventive measures:

- Charge batteries in a well-ventilated area.
- Keep batteries away from fire, sparks, or open flames (e.g., welding equipment, lighted cigarettes, etc.)
- DO NOT SMOKE when charging or handling batteries.

KEEP BATTERIES AND ELECTROLYTE OUT OF REACH OF CHILDREN.



5. Inspect:
   - Breather hose (battery) ①
     Obstruction → Reroute.
     Damage → Replace.

6. Connect:
   - Breather hose (battery) ①
     Be sure the hose is properly attached and routed.

⚠ CAUTION:

When inspecting the battery, be sure the breather pipe is routed correctly..If the breather pipe touches the frame or exits in such a way as to cause battery electrolyte or gas to exit onto the frame, structural and cosmetic damage to the motorcycle can occur.

[A] Pass the battery breather hose through the guide ② on swingarm.

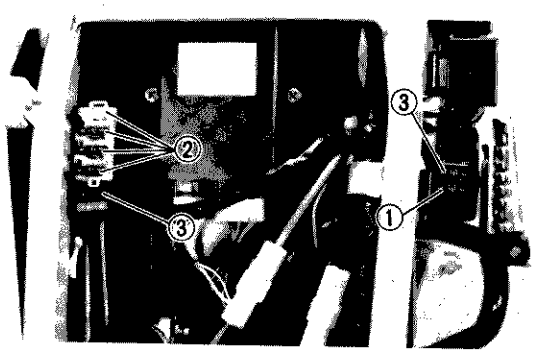
FUSE INSPECTION

1. Remove:
   - Seat
   - Side cover (left)
     Refer to "COWLINGS/COVERS REMOVAL AND INSTALLATION" section.

2. Inspect:
   - Fuses
     Defective → Replace.
     Blown fuse (New) → Inspect circuit.

NOTE:

Install new fuses of proper amperage.



① Main fuse
② Other fuse
③ Spare fuse

Description	Amperage	Quantity
Main	30A	1
Headlight	20A	1
Signal	10A	1
Ignition	10A	1
Fan	10A	1
Reserve	30A	1
	20A	1
	10A	1

3. Replace:
   - Blown fuse

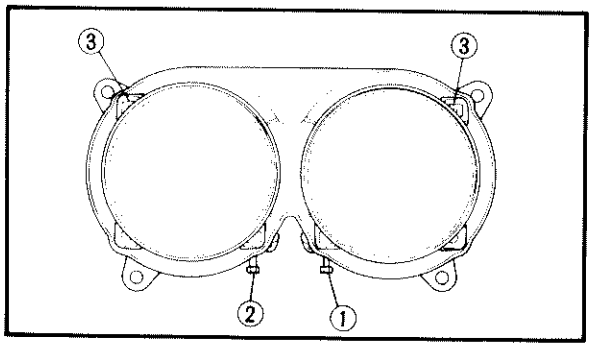
Blown fuse replacement steps:
- Turn off ignition and the circuit.
- Install a new fuse of proper amperage.
- Turn on switches to verify operation of electrical device.
- If fuse blows immediately again, check circuit in question.

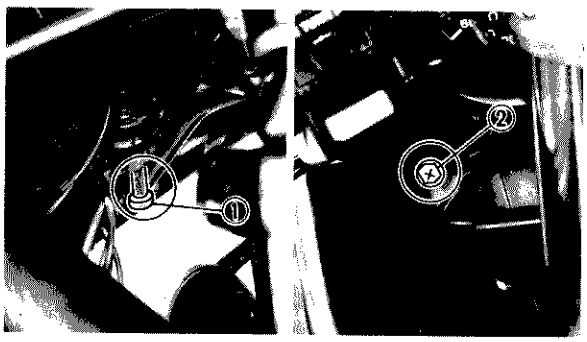
⚠ WARNING:

Do not use fuses of higher amperage rating than recommended. Extensive electrical system damage and fire could result from substitution of a fuse of improper amperage.

4. Install:
   - Side cover (left)
   - Seat

   Refer to "COWLINGS/COVERS REMOVAL AND INSTALLATION" section.





HEADLIGHT BEAM ADJUSTMENT

NOTE:

This model is equipped with dual headlight. Adjust the headlight beam for each individual headlight.

1. Adjust:
   - Headlight beam (horizontally)

(Right headlight)

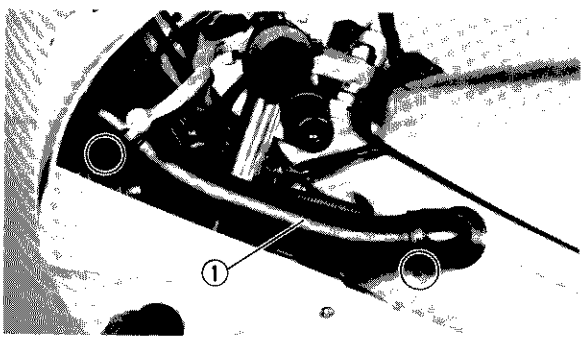
Horizontal adjustment	
Right	Turn adjusting screw ① clockwise
Left	Turn adjusting screw ① counter-clockwise

(Left headlight)

Horizontal adjustment	
Right	Turn adjusting screw ② counter-clockwise
Left	Turn adjusting screw ② clockwise

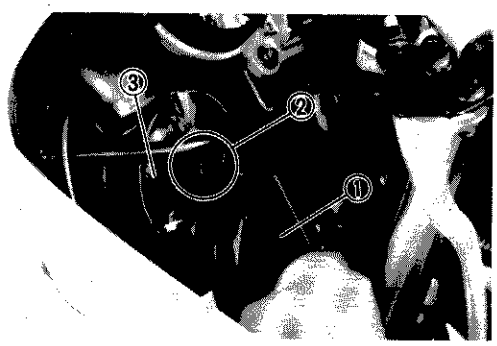
2. Adjust:
   - Headlight beam (vertically)

Vertical adjustment	
Higher	Turn the adjusting screw ③ clock-wise
Lower	Turn the adjusting screw ③ counter-clockwise

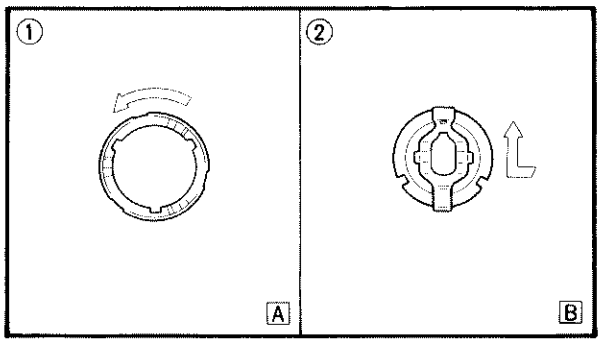


HEADLIGHT BULB REPLACEMENT

1. Remove:
   - Air intake duct ①



2. Remove:
   - Headlight covers ①
3. Disconnect:
   - Headlight couplers ②
4. Remove:
   - Headlight bulb cover ③



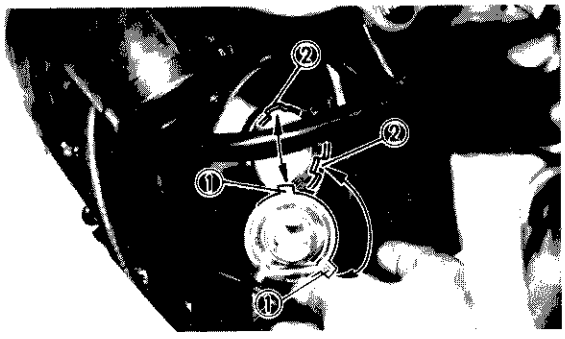
5. Remove:
   • Bulb holder

① Left side
② Right side
A Turn
B Unhook

6. Remove:
   • Bulb (defective)

⚠ WARNING:

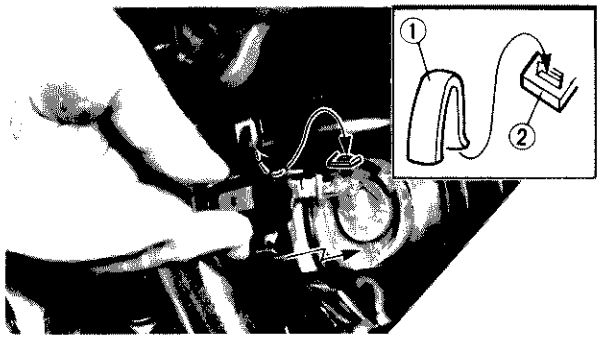
Keep flammable products or your hands away from the bulb while it is on, it will be hot. Do not touch the bulb until it cools down.



7. Install:
   • Bulb (new)

NOTE:

• Left side:
Make sure the projections ① on the bulb are meshed with the slot ② in the bulb case.



• Right side:
Make sure the projections ① on the bulb are meshed with the slot ② in the bulb case.

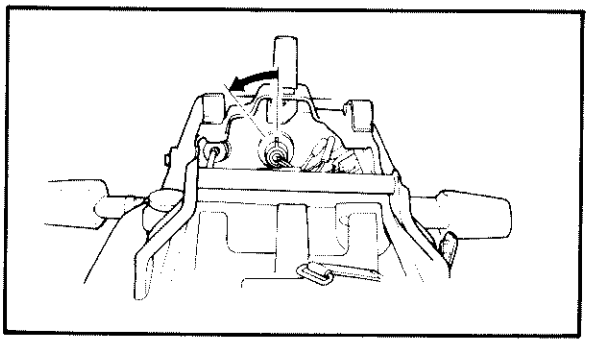
⚠ CAUTION:

Avoid touching the glass part of the bulb. Keep it free from oil; otherwise, the transparency of the glass, life of the bulb, and illuminous flux will be adversely affected. If oil gets on the bulb, throughly clean it with a cloth moistened with alcohol or lacquer thinner.

TAIL/BRAKE BULB REPLACEMENT

1. Remove:
   - Seat
   - Tail cover

   Refer to "COWLINGS/COVERS REMOVAL AND INSTALLATION" section.



2. Remove:
   - Bulb socket

   Turn the bulb socket approximately counterclockwise.
3. Remove:
   - Defective bulb
4. Install:
   - Bulb scoket
   - Tail cover
   - Seat

ENGINE OVERHAUL

ENGINE REMOVAL

NOTE:
It is not necessary to remove the engine in order to remove the following components:
- Cylinder head
- Cylinder
- Piston
- Clutch
- Water pump
- A.C. magneto

SIDE COWLINGS AND TOP COVER

1. Remove:
   - Side cowlings (left and right)
   - Upper cowling
   - Seats (front and rear)
   - Top cover

   Refer to the "COWLING AND COVERS REMOVAL AND INSTALLATION" section in the CHAPTER 3.

FUEL TANK

1. Remove:
   - Fuel tank
   - Air filter case

   Refer to the "CARBURETOR – REMOVAL" section in the CHAPTER 6.

ENGINE OIL

1. Drain:
   - Engine oil

   Refer to the "ENGINE OIL REPLACEMENT" section in the CHAPTER 3.

COOLANT

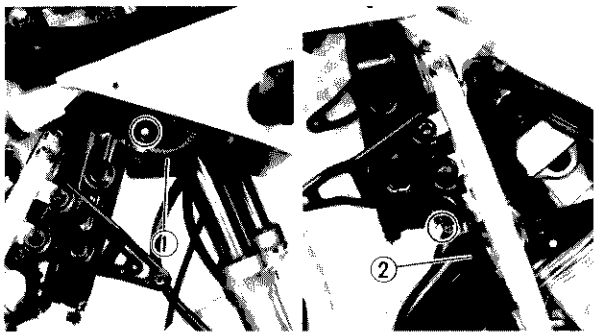
1. Drain:
   - Coolant

   Refer to the "COOLANT REPLACEMENT" section in the CHAPTER 3.

AIR FILTER CASE AND CARBURETOR

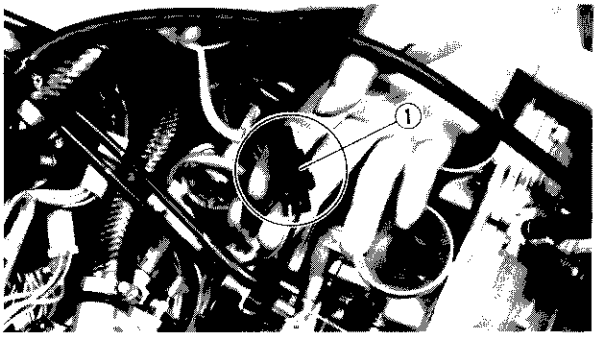
1. Remove:
   - Carburetor

   Refer to the "CARBURETOR – REMOVAL" section in the CHAPTER 6.



RADIATOR

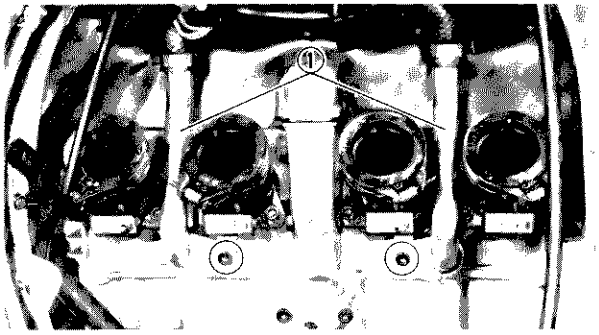
1. Disconnect:
   - Radiator hose (radiator – inlet) ①
   - Radiator hose (radiator – outlet) ②



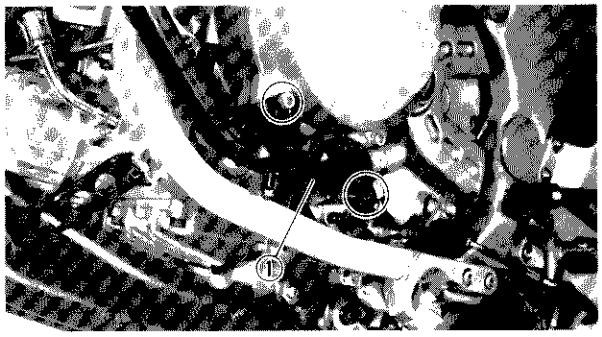
2. Disconnect:
   - Fan motor coupler
3. Remove:
   - Radiator assembly

⚠ CAUTION:

Cover the cylinder head cover and the fender with rugs to prevent a scratching.

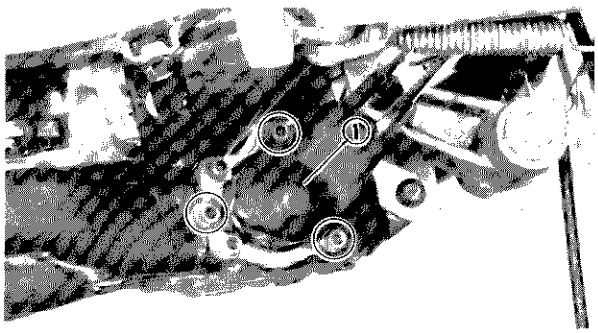


4. Disconnect:
   - Pipes (left and right) ①

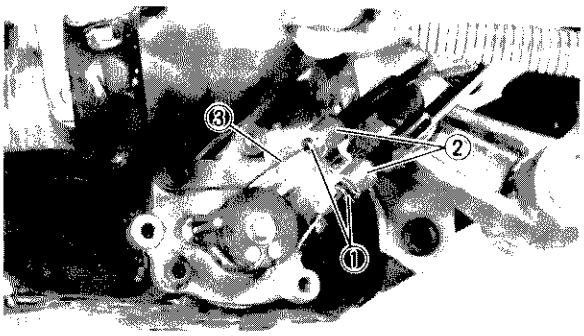


5. Remove:
   - Pipes (radiator – outlet) ①

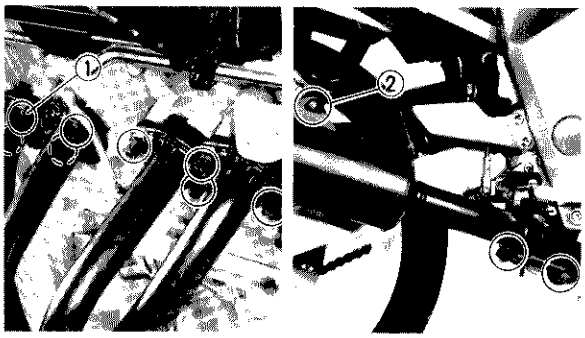
MUFFLER ASSEMBLY



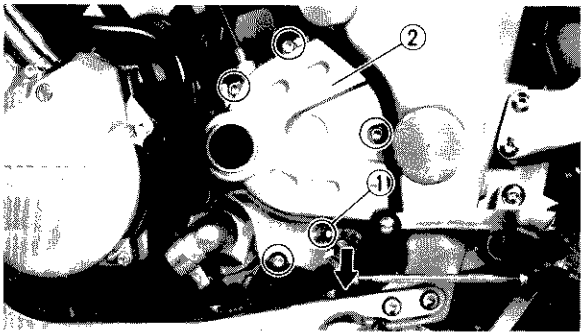
1. Remove:
   - Valve cover ① (FZR600WC only)



2. Fully loosen the locknuts ① and turn in the adjusters ② completely (FZR600WC only).
3. Disconnect:
   - EXUP cables ③ (FZR600WC only)

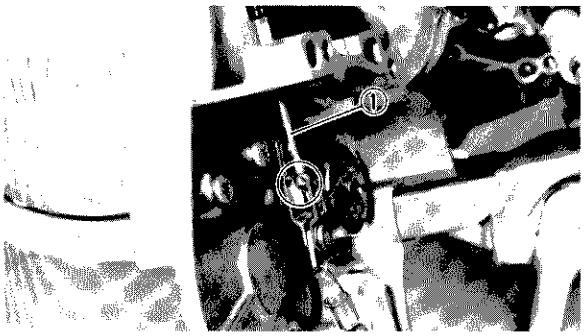


4. Remove:
   - Nuts (exhaust pipe) ①
   - Bolt (muffler bracket) ②
   - Muffler assembly

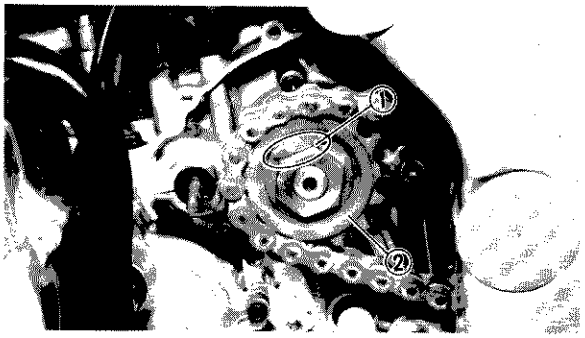


CLUTCH CABLE AND DRIVE CHAIN

1. Remove:
   - Bolt (shift arm) ①
     Pull out the shift arm.
   - Crankcase cover (left) ②
   - Collar (shift shaft)



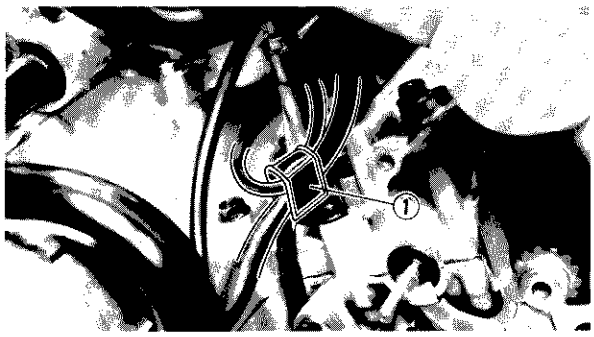
2. Disconnect:
   - Clutch cable ①



3. Straighten:
   - Lock washer tab ①
4. Remove:
   - Nut (drive sprocket)
   - Lock washer
   - Drive sprocket ②

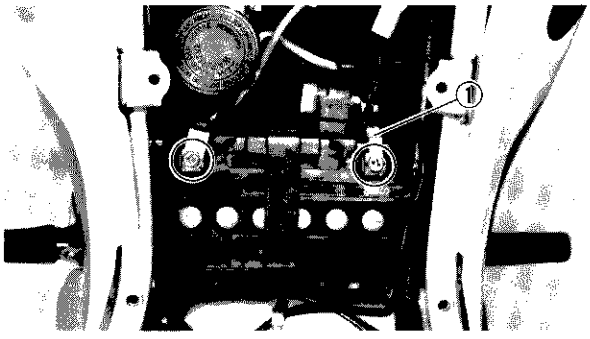
NOTE:

Loosen the nut (drive sprocket) while appling the rear brake.



LEADS

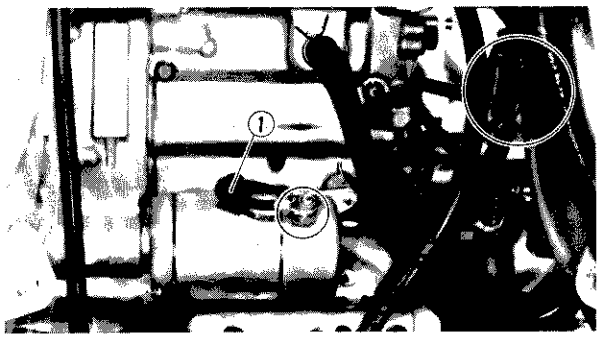
1. Straighten:
   - Clamp ①



2. Disconnect:
   - Battery leads ①

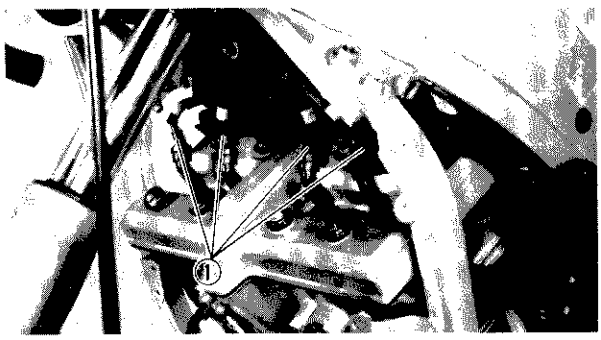
NOTE:

Disconnect the negative lead ① first, and then disconnect the positive lead.

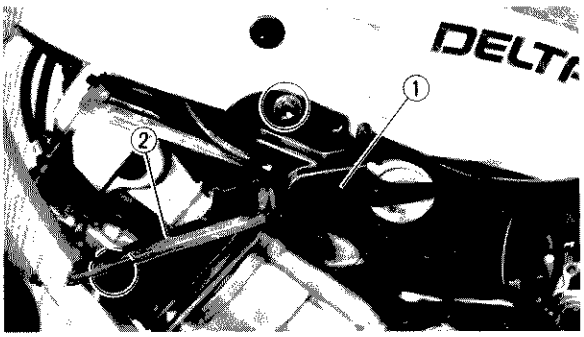


3. Disconnect:
   - Lead (starter motor) ①

4. Remove:
   - Cover
5. Disconnect:
   - Coupler (oil level neutral switch)
   - Coupler (A.C. generator)
   - Coupler (sidestand switch)

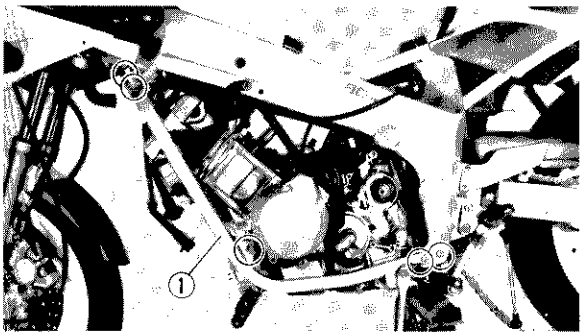


6. Disconnect:
   - Spark plug leads ①

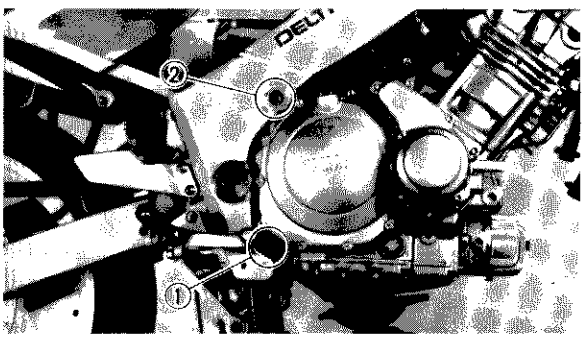


ENGINE REMOVAL

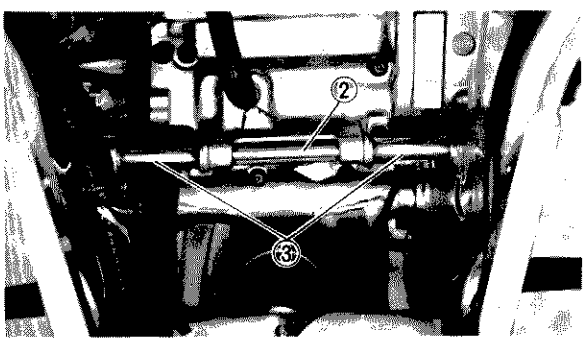
1. Remove:
   - Cover ①
   - Starter lever ②

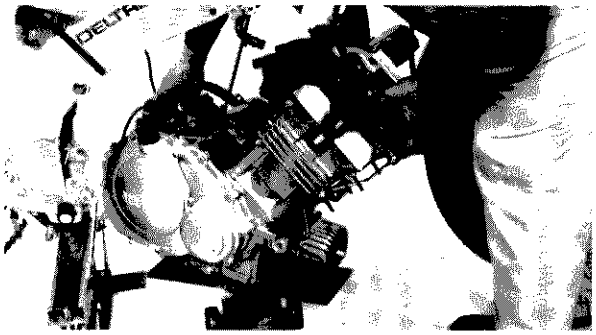


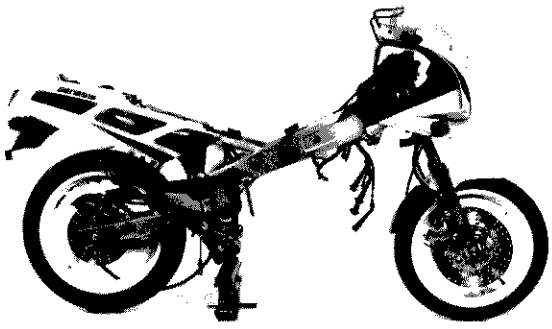
2. Place a suitable stand under the engine.
3. Remove:
   - Down tube frames (left and right) ①



4. Remove:
   - Bolt (engine-mounting lower) ①
   - Bolt (engine-mounting upper) ②
   - Collars ③







5. Remove:
   - Engine assembly

   From right side.

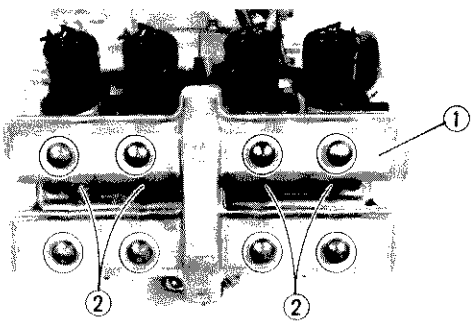
ENGINE DISASSEMBLY

CYLINDER HEAD COVER, CAMSHAFT AND CYLINDER HEAD

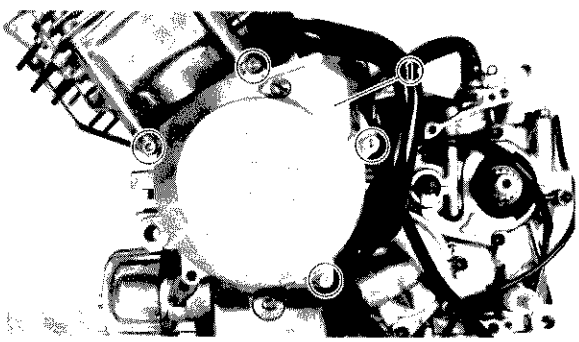
NOTE:

With the engine mounted, the cylinder head cover, camshaft and cylinder head can be maintained by removing the following parts.

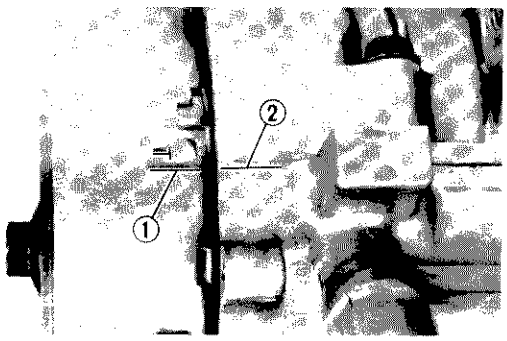
- Side cowlings (left and right)
- Seats (front)
- Top cover
- Radiator
- Air filter case
- Carburetor
- Muffler assembly
- Down tube frame (right)



1. Remove:
   - Cylinder head cover ①
   - Gasket (cylinder head cover)
   - Spark plugs ②



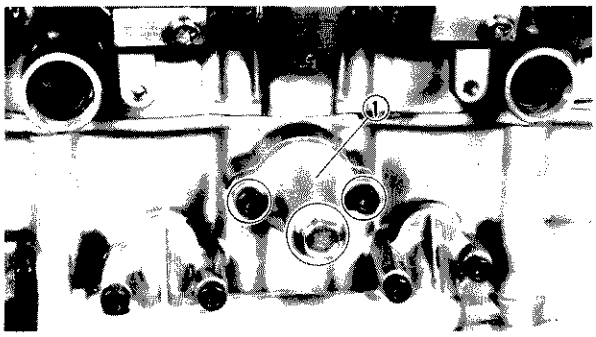
2. Remove:
   - Generator cover ①
   - Dowel pins



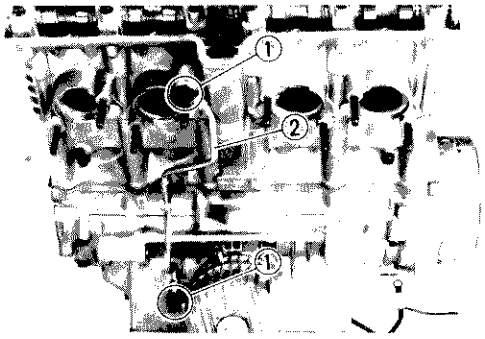
3. Align:
   - "T" mark ①
   - Crankcase matching line ②

NOTE:

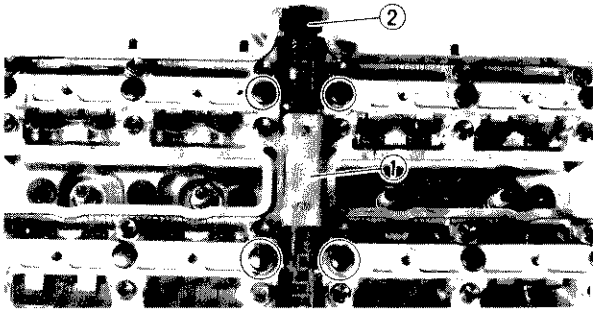
Turn the crankshaft counterclockwise and align the "T" mark ① on the rotor with the crankcase matching line ② when #1 piston is at TDC on compression stroke.



4. Remove:
   - Timing chain tensioner ①
   - Gasket (cam chain tensioner)



5. Remove:
   - Union bolts ①
   - Oil delivery pipe ②
   - Copper washers



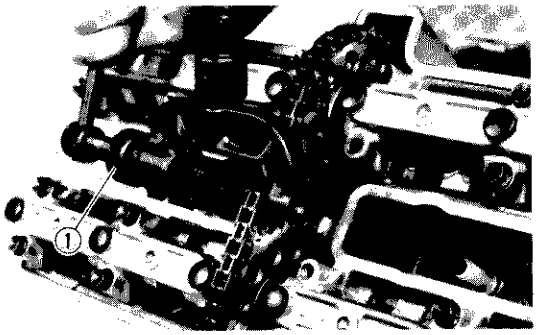
6. Remove:
   - Timing chain guide (upper) ①
   - Timing chain guide (exhaust side) ②

NOTE:

- Select either of the two procedures explained in this manual, as follows:

- Procedure 1.
  For engine service except cylinder head disassembly.
  → Disconnect the timing chain.
  The pistons and cylinder can be removed without removing the camshafts.

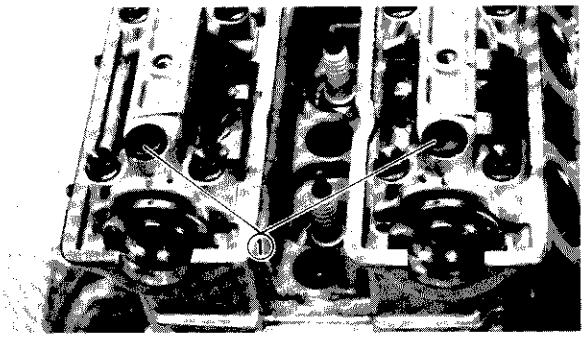
- Procedure 2.
  For engine service including cylinder head disassembly.
  → Remove the cam caps and camshafts.
  The camshafts can be removed without disconnecting the timing chain.



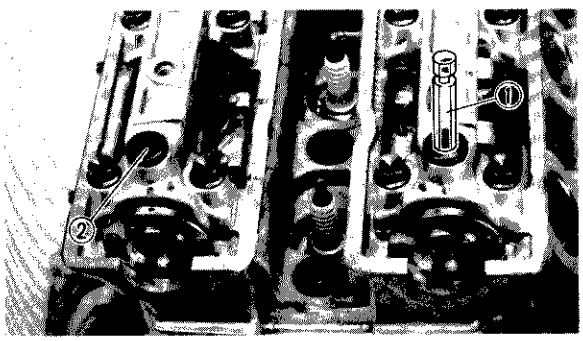
Procedure 1.

1. Disconnect:
   - Timing chain
     Use the Timing chain cutter ①

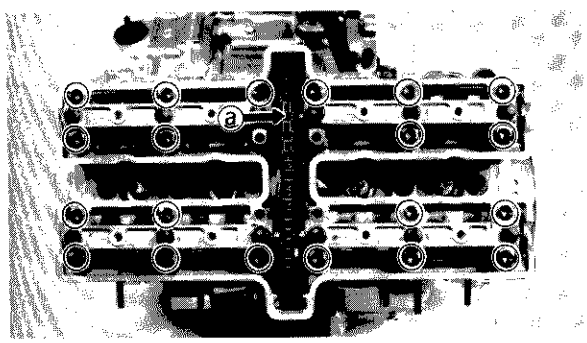
Timing chain cutter:
YM-01112,
90890-01112



2. Remove:
   - Rubbers (camshaft cap) ①



3. Remove:
   - Caps ②
   - Nuts (cylinder head)
     Use the Hexagon wrench 6 mm (0.24 in) ①.
4. Remove:
   - Cylinder head
   - Gasket (cylinder head)
   - Dowel pins
5. Go to "CYLINDER AND PISTON".

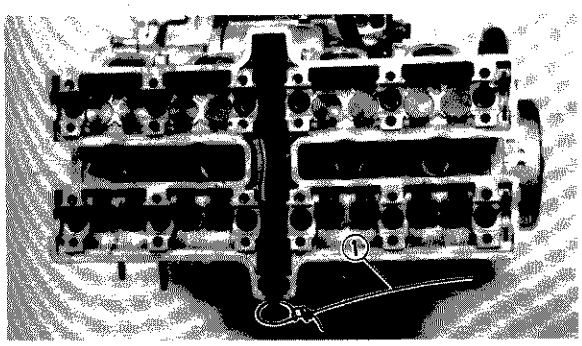


Procedure 2.

1. Remove:
   - Bolts (camshaft sprocket exhaust)
2. Push the camshaft sprocket with arrow ⓐ direction and take of sprocket from its home position.
3. Remove:
   - Camshaft caps
   - Dowel pins

NOTE:

Remove the camshaft caps in a crisscross pattern from outermost to inner caps.



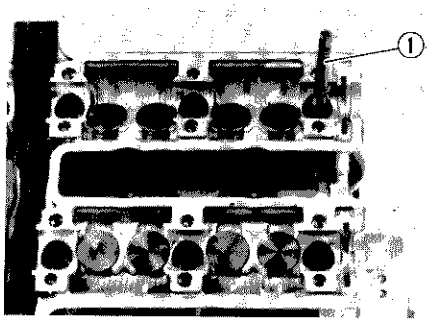
⚠CAUTION:

Do not rotate the camshaft or valve damage may occur.

4. Remove:
   - Camshafts

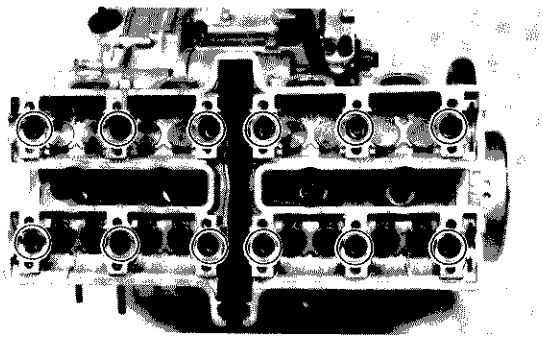
NOTE:

Fasten safety wire ① to the cam chain to prevent it from falling into the crankcase.



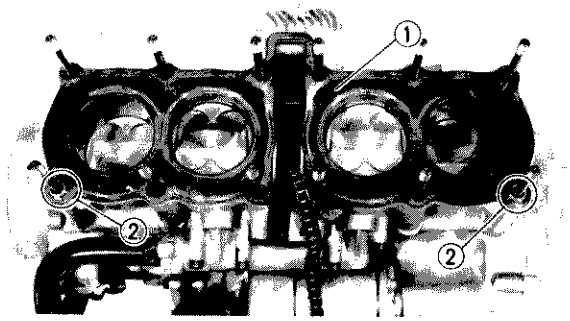
5. Remove:
   - Nuts (Cylinder head)
     Use the Hexagon wrench 6 mm (0.24 in) ①.

NOTE:
- Loosen the nuts in their proper loosening sequence.
- Follow numerical order shown in photo. Start by loosening each nut 1/2 turn until all are loose.



6. Remove:
   - Cylinder head

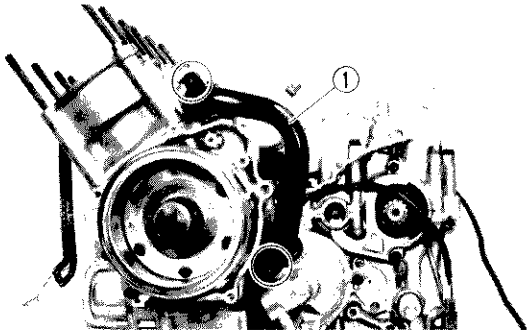
NOTE:
Remove the cylinder head as a whole to prevent the valve lifters and adjusting pads from falling into the crankcase.



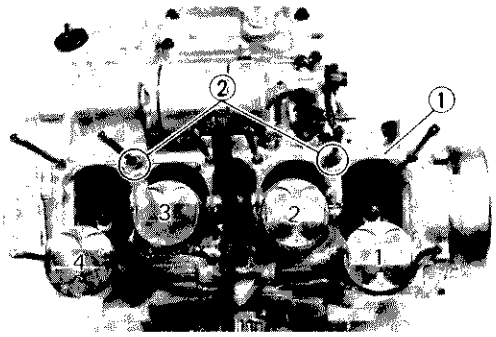
7. Remove:
   - Gasekt (cylinder head) ①
   - Dowel pins ②

CYLINDER AND PISTON

NOTE:
With the engine mounted, the cylinder and piston can be maintained by removing the following parts.
- Side cowlings (left and right)
- Seat
- Top cover
- Radiator
- Air filter case
- Carburetor
- Muffler assembly
- Down tube frame (right)
- Cylinder head

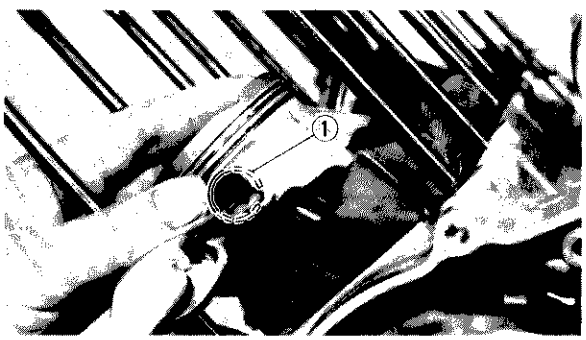


1. Remove:
   - Water pipe ①
   - O-rings
   - Cylinder



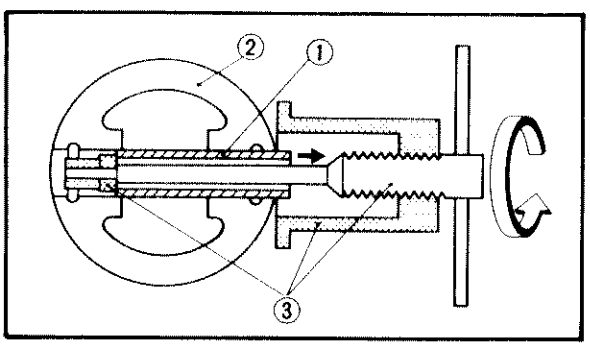
2. Remove:
   - Gasket (cylinder) ①
   - Dowel pins ②

NOTE:
Put identification marks on the each piston head for reference reinstalation.



3. Remove:
   - Circlips (piston pin) ①

NOTE:
Before removing the piston pin circlip, cover the crankcase with a clean rag to prevent the circlip from falling into the crankcase cavity.

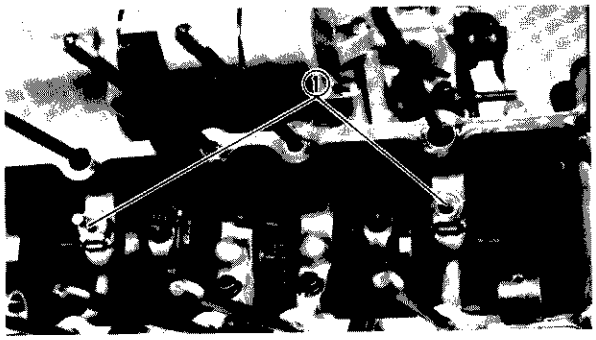


4. Remove:
   - Piston pins ①
   - Pistons ②

NOTE:
Before removing the piston pin, deburr the clip grooved and pin hole area. If the piston pin groove is deburred and piston pin is still difficult to remove, use the Piston pin puller ③.

Piston pin puller:
YU-01304,
90890-01304

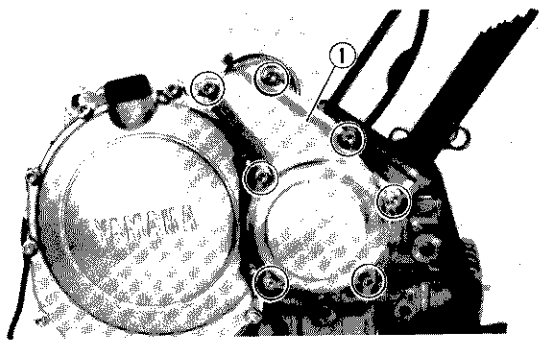
⚠ CAUTION:
Do not use a hammer to drive the piston pin out.



5. Remove:
   - Oil jet nozzles ①

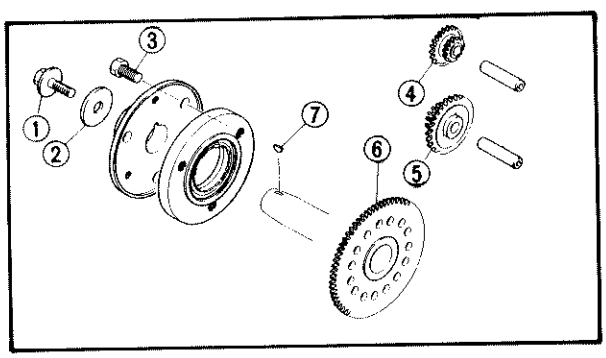
STARTER CLUTCH

NOTE:
With the engine mounted, hte clutch can be maintained by removing the following parts.
- Side cowlings
- Starter clutch cover

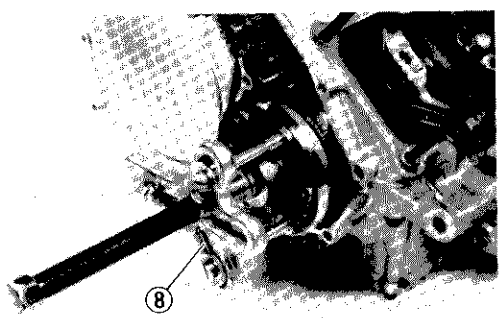


1. Remove:
   - Starter clutch cover ①
   - Dowel pins
   - Gasket

NOTE:
Working in a crisscross pattern, loosen bolts 1/4 turn each. Remove them after all are loosened.



2. Remove:
   - Starter clutch ①
   - Washer ②
   - Bolt (starter clutch) ③
   - Starter idle gear (primary) ④
   - Starter idle gear (secondary) ⑤
   - Starter clutch gear ⑥
   - Woodruff key ⑦

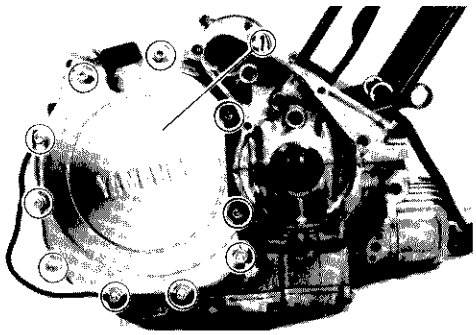


NOTE:
Use the flywheel puller set ⑧ to remove the starter clutch.

Flywheel puller set:
YU-33270,
90890-01362

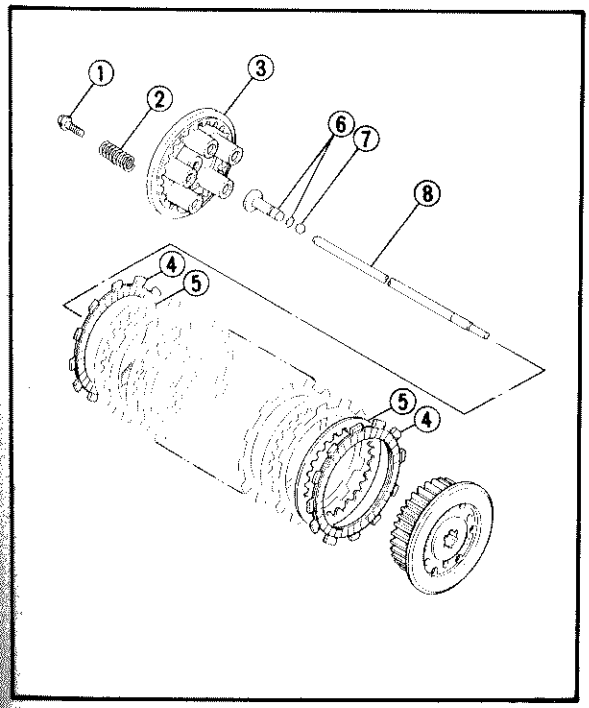
CLUTCH

NOTE:
With the engine mounted, the clutch assembly can be maintained by removing the following parts.
- Side cowling (right)
- Crankcase cover (right)



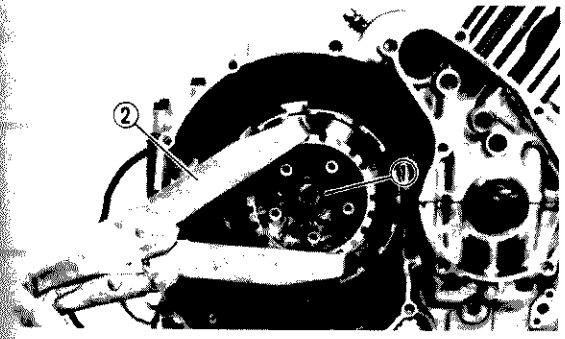
1. Remove:
   - Crankcase cover (right) ①
   - Gasket (crankcase cover)
   - Dowel pins

NOTE:
Working in a crisscross pattern, loosen bolts 1/4 turn each. Remove them after all are loosened.



2. Remove:
   - Bolts (clutch spring) ①
   - Clutch springs ②
   - Pressure plate ③
   - Friction plates ④
   - Clutch plates ⑤
   - Push rod #1 ⑥
   - Ball ⑦
   - Push rod #2 ⑧

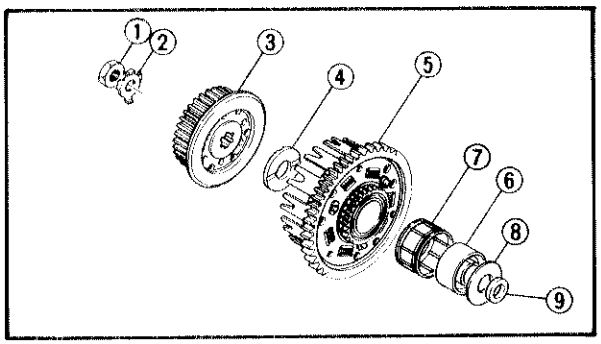
NOTE:
Loosen the bolts in a crisscross pattern.



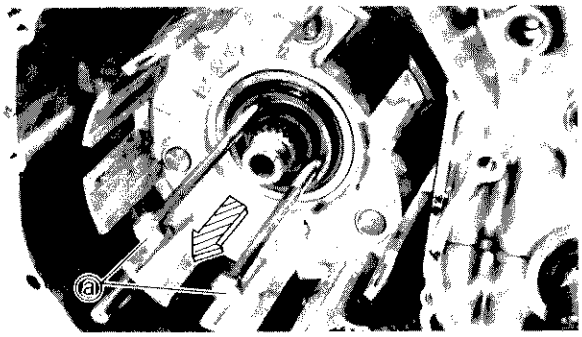
3. Straighten the lock washer tabs.
4. Loosen:
   - Nut (clutch boss) ①

Universal clutch holder:
YM-91042,
90890-04086

NOTE:
Loosen the nut ① (clutch boss) while holding the clutch boss with the Universal clutch holder ②



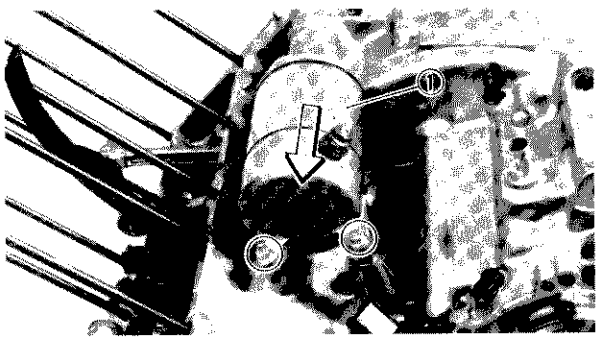
5. Remove:
   - Nut (clutch boss) ①
   - Lock washer ②
   - Clutch boss ③
   - Thrust washer ④
   - Spacer ⑤
   - Bearing ⑥
   - Clutch housing ⑦
   - Thrust washer ⑧
   - Collar ⑨



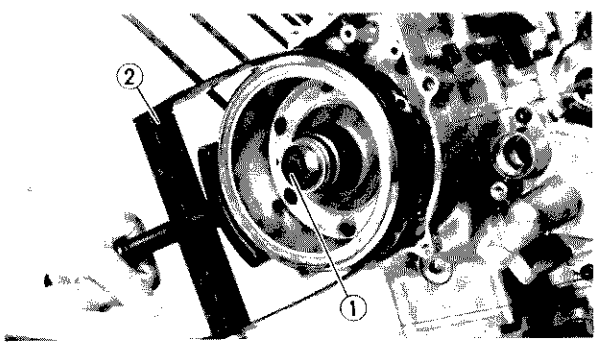
NOTE:
Install the 5 mm (0.2 in) screw ⓐ into the spacer. Then, remove the spacer by pulling on the screw.

STARTER MOTOR AND A.C. GENERATOR

NOTE:
With the engine mounted, the starter motor, can be maintained by removing the following parts.
- Seat
- Top cover
- Fuel tank

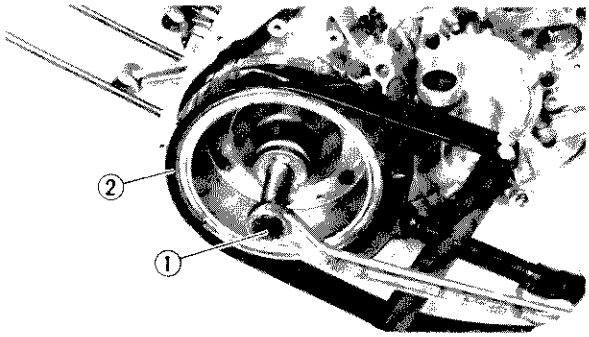


1. Remove:
   - Starter motor ①



2. Remove:
   - Bolt (magneto) ①
   - Washer

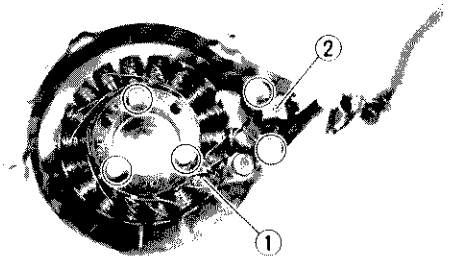
Rotor holding tool ②:
YS-01880,
90890-01235



3. Attach:
   - Rotor puller ①

Rotor puller:
YM-01080,
90890-01080

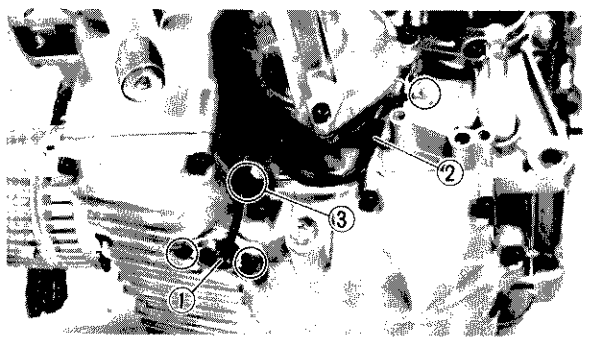
4. Remove:
   - Magneto ②
   - Woodruff key



5. Remove:
   - Startor coil assembly ①
   - Pickup coil ②

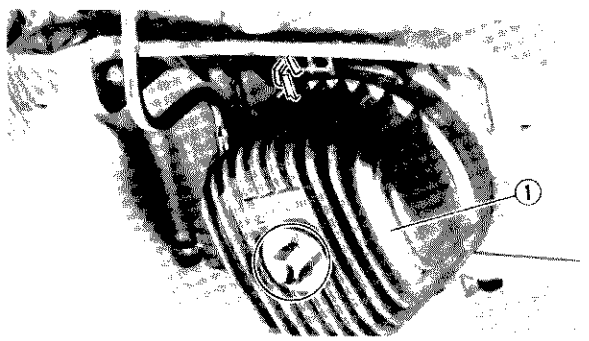
OIL PAN AND OIL STRAINER

NOTE:
With the engine mounted, the oil pan and oil strainer can be maintained by removing the following parts.
- Side cowlings (left and right)
- Exhaust pipe assembly
- Cowling stay

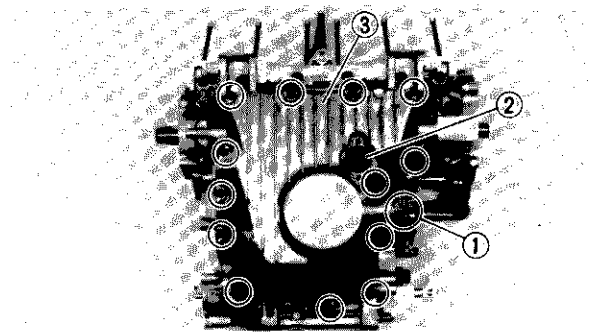


1. Disconnect:
   - Oil level switch lead ①
   - Neutral switch lead ②

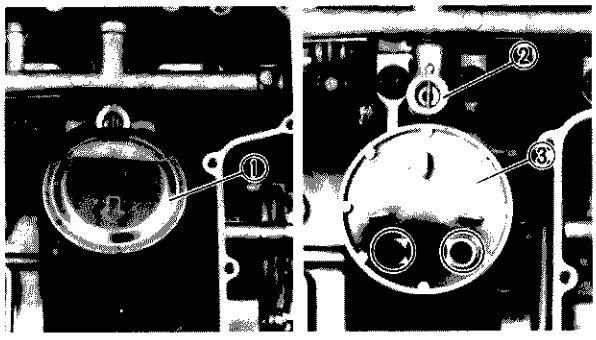
③ Clamp



2. Remove:
   - Oil filter assembly ①



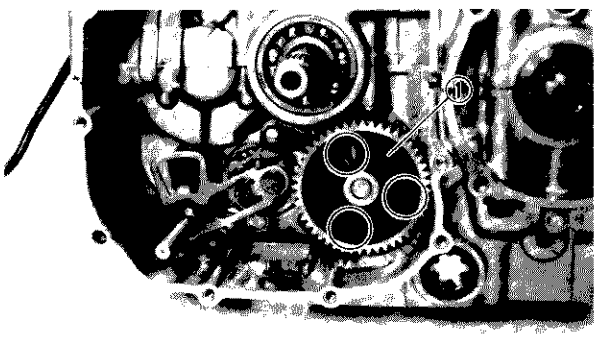
3. Remove:
   - Drain plug ①
   - Oil level switch ②
   - Oil pan ③
   - Gasket (oil pan)
   - Dowel pins



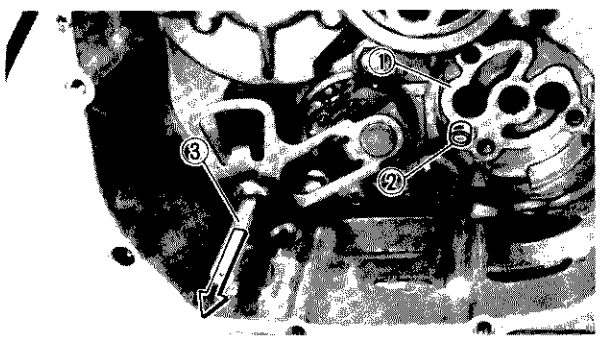
4. Remove:
   - Oil strainer cover ①
   - Relief valve ②
   - Oil strainer assembly ③

OIL PUMP AND SHIFT SHAFT

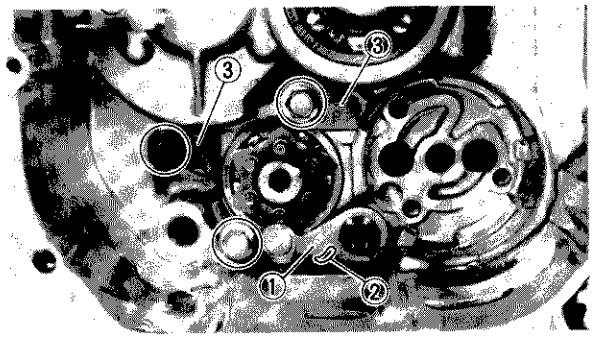
NOTE:
With the engine mounted, the oil pump and shift shaft can be maintained by removing the following parts.
- Side cowlings
- Crankcase cover (right)
- Clutch assembly



1. Remove:
   - Oil pump assembly ①



2. Remove:
   - Gasket (oil pump assembly) ①
   - Dowel pin ②
   - Shift shaft ③



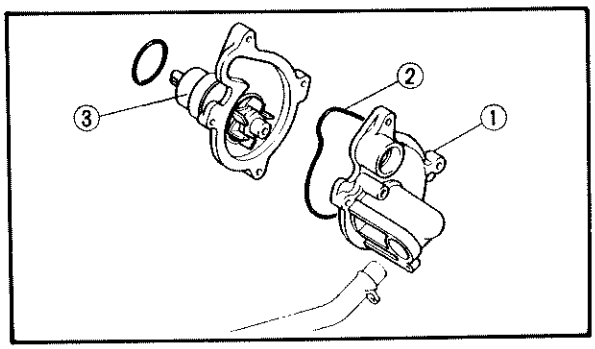
3. Remove:
   - Stopper lever ①
   - Spring ②
   - Stopper plate (shift shaft guide bar) ③

WATER PUMP

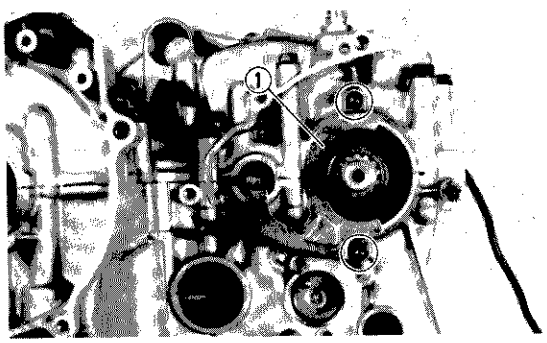
NOTE:

With the engine mounted, the water pump can be maintained by removing the following parts.

- Seat
- Top cover
- Side cowlings
- Shift arm
- Crankcase cover (right)
- Radiator hose
- Water pump cover

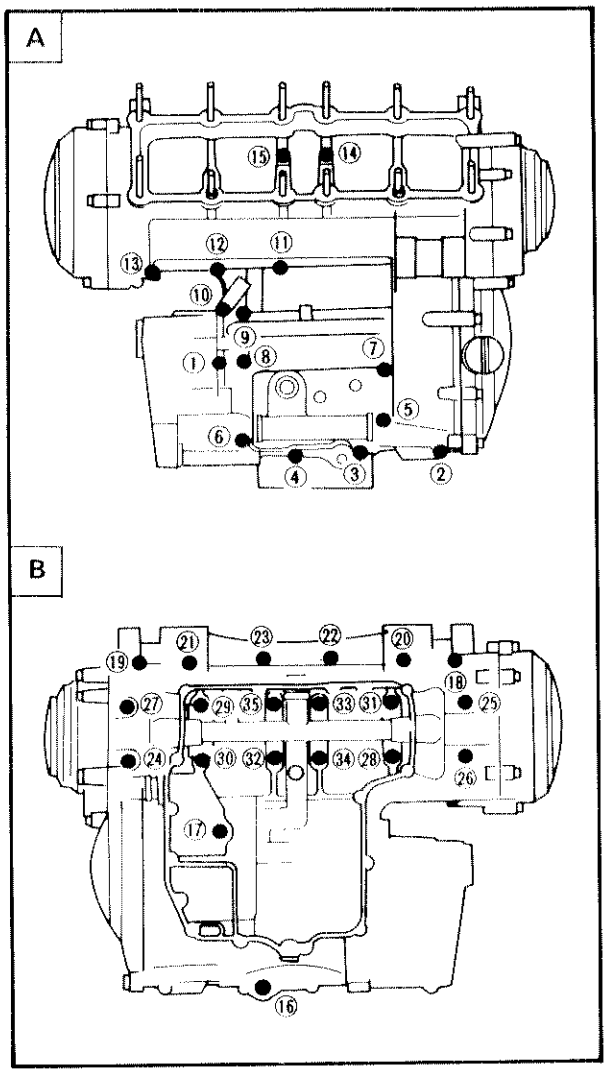


1. Remove:
   - Water pump cover ①
   - O-ring ②
   - Water pump housing ③



CRANKCASE DISASSEMBLY

1. Remove:
   - Oil seal stopper ①



3. Remove:
   - Bolts (crankcase)

NOTE:
- Remove the bolts starting with the highest numbered one.
- The embossed numbers in the crankcase designate the crankcase tightening sequence.

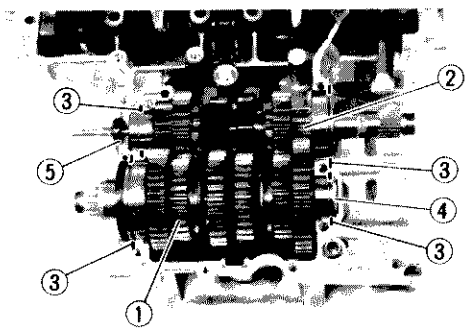
4. Place the engine upside down.
5. Remove:
   - Crankcase (lower)

   Use a soft hammer.

⚠ CAUTION:

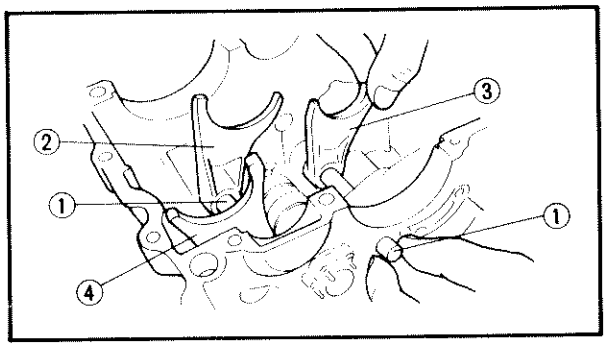
Use a soft hammer to tap on the case half. Tap only on reinforced portions of the case. Do not tap on the gasket mating surface. Work slowly and carefully. Make sure that the case halves separate evenly.

[A] Upper case
[B] Lower case



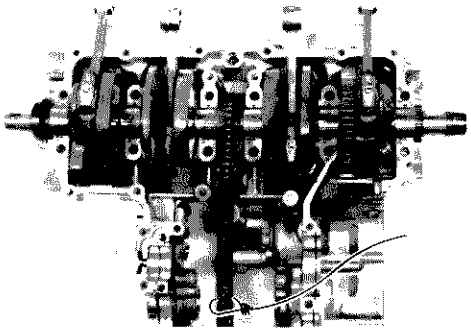
TRANSMISSION, SHIFTER AND SHIFT CAM

1. Remove:
   - Drive axle assembly ①
   - Main axle assembly ②
   - Dowel pins
   - Circlip ③
   - Special washer ④
   - Oil seal ⑤



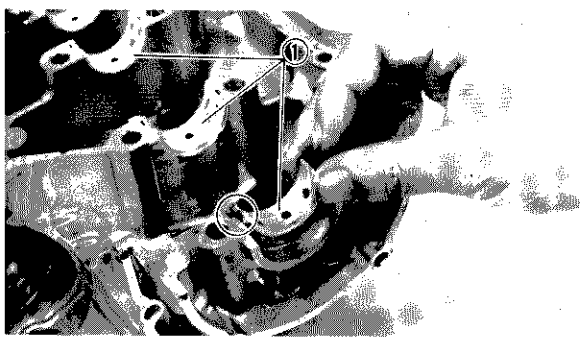
2. Remove:
   - Guide bars ①
   - Shift fork #1 ②
   - Shift fork #2 ③
   - Shift fork #3 ④

3. Remove:
   - Shift cam ①



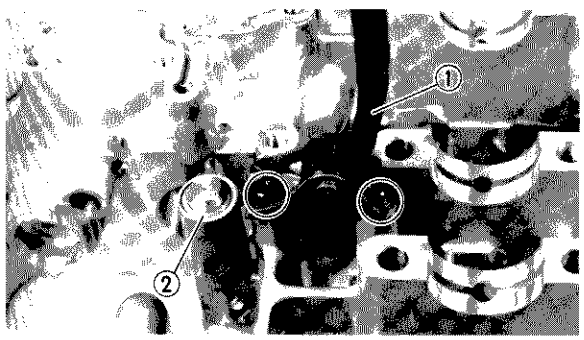
CRANKSHAFT

1. Remove:
   - Crankshaft assembly

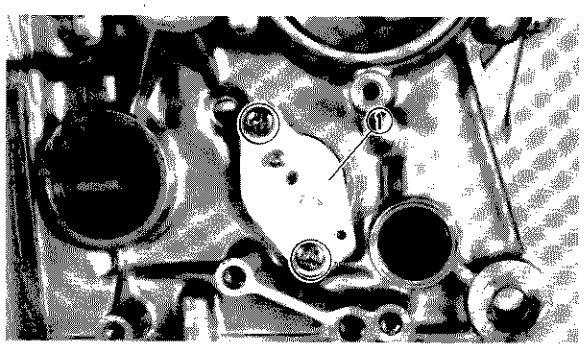


2. Remove:
   - Main journal bearing ①

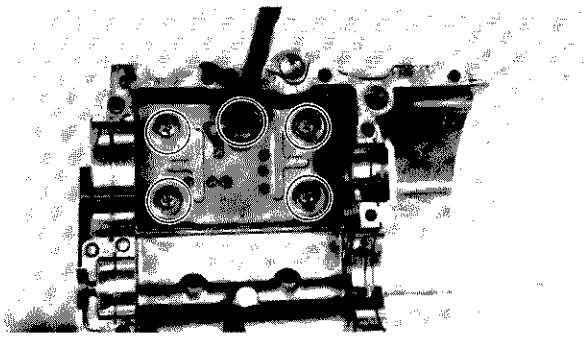
NOTE:
Identify each main journal bearing position very carefully so that it can be reinstalled in its original place.



3. Remove:
   - Timing chain guide (intake side) ①
   - O-ring ②



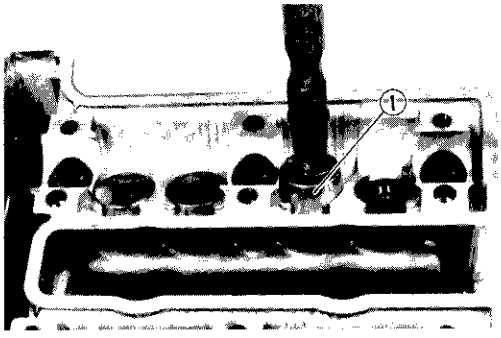
4. Remove:
   - Neutral switch ①



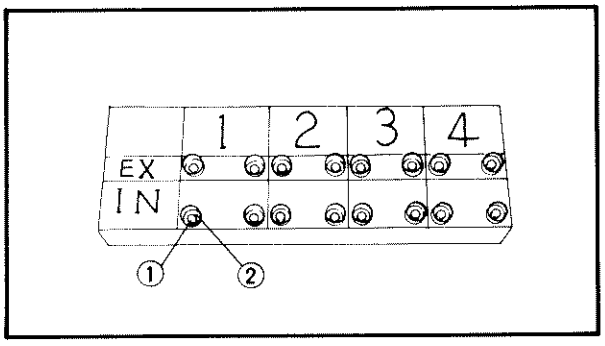
5. Remove:
   - Breather hose
   - Oil baffle plate

VALVE PAD AND VALVE

NOTE:
Before removing the internal parts (valve, valve spring, valve seat etc.) of the cylinder head, the valve sealing should be checked.

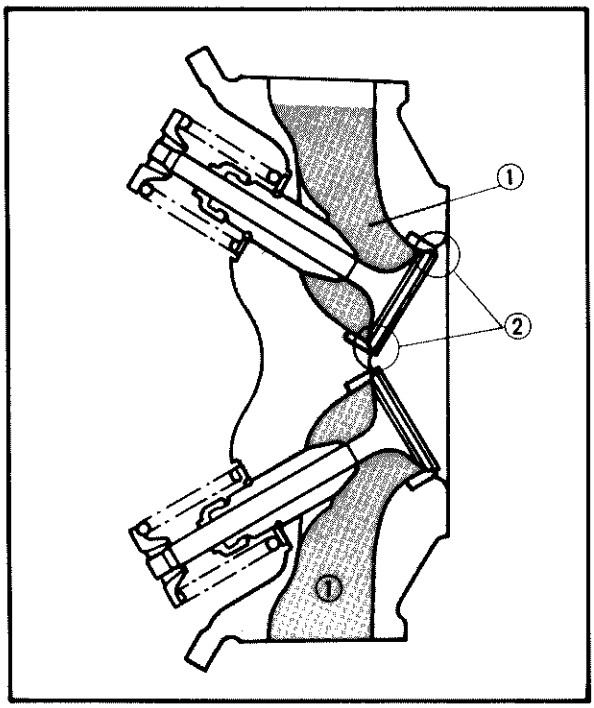


1. Remove:
   - Lifters ①
   - Valve pads



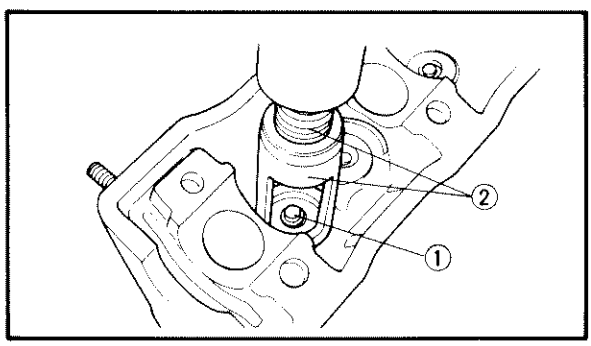
NOTE:
Identify each lifter and pad position very carefuly so that it can be reinstalled in its original place.

① Lifters
② Valve pads



2. Check:
   - Valve sealing
     Leakage at valve seat → Inspect the valve face, valve seat and valve seat width.
     Refer to the "INSPECTION AND REPAIR – VALVE SEAT" section.

Checking steps:
- Supply a clean solvent ① into the intake and exhaust ports.
- Check the valve sealing. There should be no leakage at the valve seats ②.

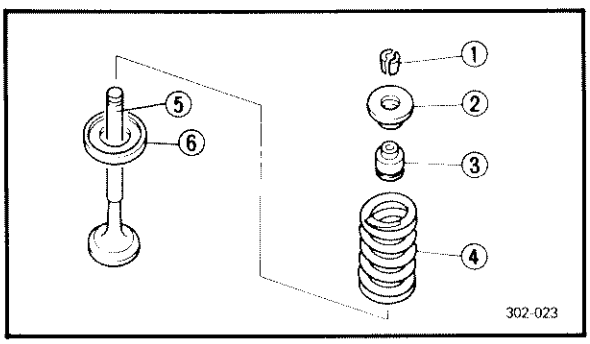


3. Remove:
   - Valve cotters ①

NOTE:
Attach the valve spring compresser and attachment ② between the valve spring seat and cylinder head to remove the valve cotters.

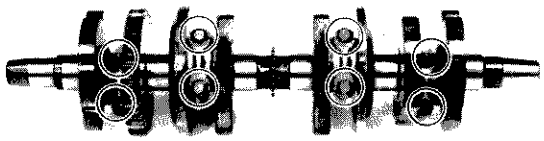
Valve spring compresser:
YM-04019,
90890-04019

Attachment:
YM-04018,
90890-04108



4. Remove:
   - Valve cotters ①
   - Valve retainer ②
   - Oil seal ③
   - Valve spring ④
   - Valve ⑤
   - Valve retainer ⑥

NOTE:
Identify each part position very carefully so that it can be reinstalled in its original place.

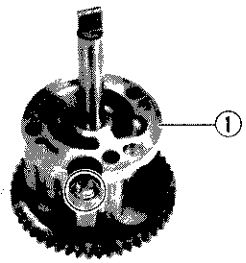


CONNECTING ROD

1. Remove:
   - Connecting rod
   - Connecting rod bearing

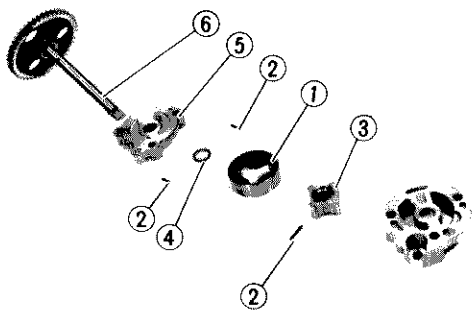
NOTE:

Identify each connecting rod bearing position very carefully so that it can be reinstalled in its original place.

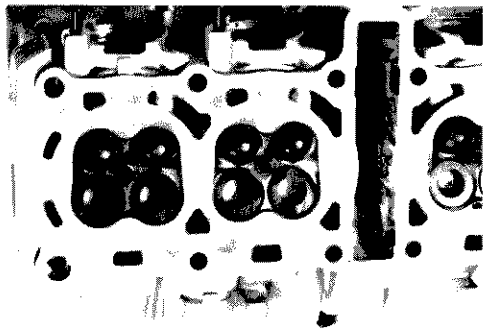


INNER ROTOR (OIL PUMP)

1. Remove:
   - Pump housing ①



2. Remove:
   - Outer rotor ①
   - Pin ②
   - Inner rotor ③
   - Washer ④
   - Pump cover ⑤
   - Pump shaft ⑥



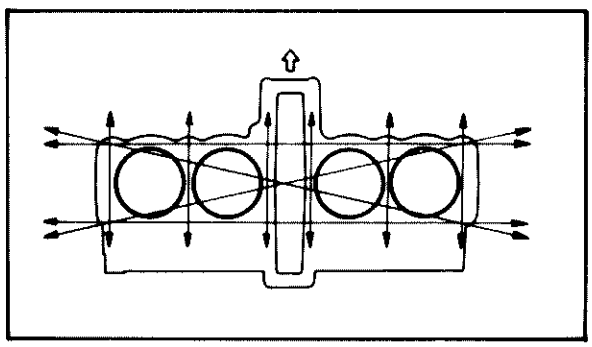
INSPECTION AND REPAIR

CYLINDER HEAD

1. Eliminate:
   - Carbon deposit
     (from combustion chamber)
     Use rounded scraper.

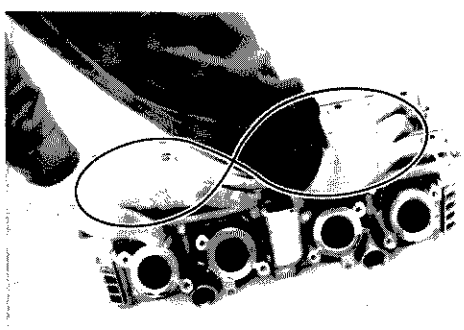
NOTE:
Do not use a sharp instrument and avoid damaging or scratching:
- Spark plug threads
- Valve seat

2. Inspect:
   - Cylinder head
     Scratches/Damage → Replace.



3. Measure:
   - Warpage
     Out of specification → Resurface.

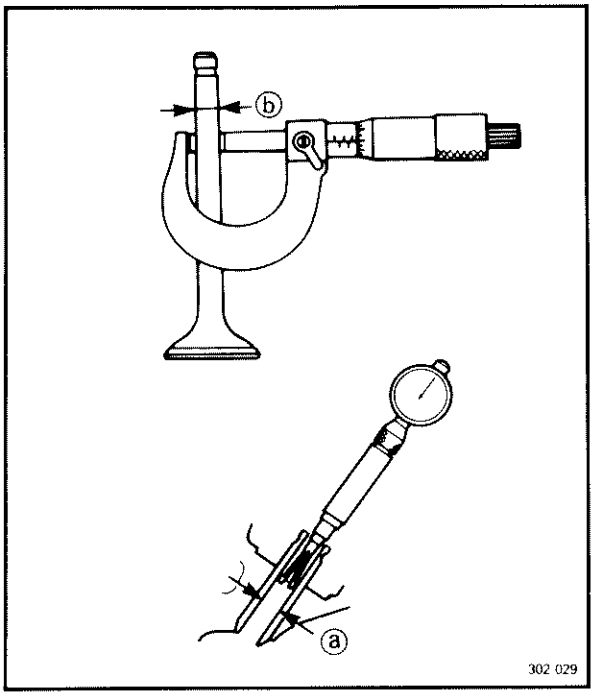
Cylinder head warpage:
Less than 0.03 mm (0.0012 in)

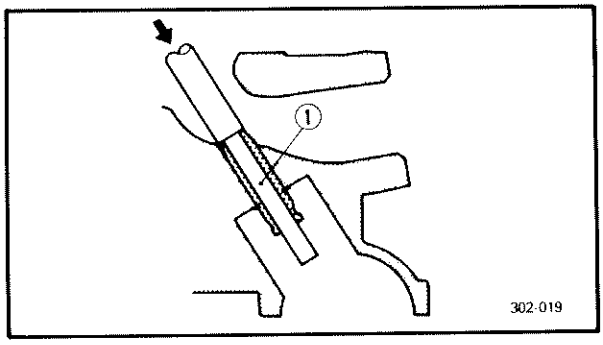


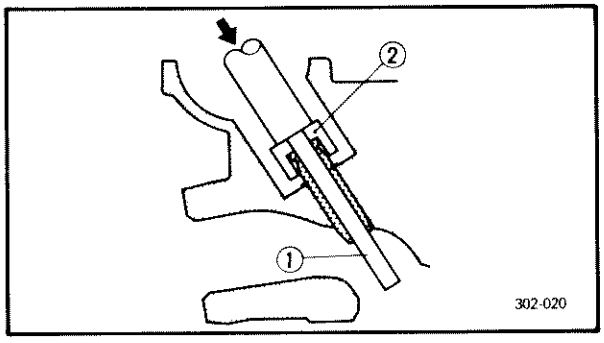
4. Resurface:
   - Cylinder head

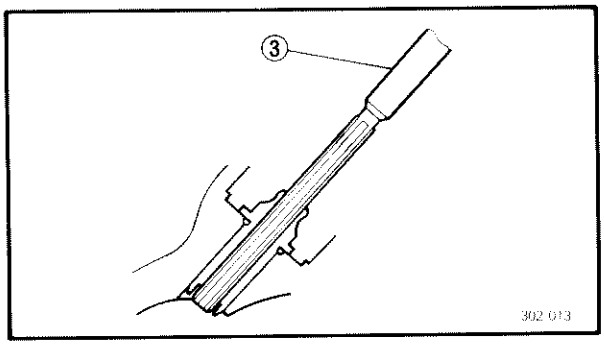
Resurfacement steps:
Place a 400 ~ 600 grit wet sandpaper on the surface plate, and resurface the head using a figure-eight sanding pattern.

NOTE:
Rotate the head several times to avoid removing too much material from one side.









VALVE AND VALVE GUIDE

1. Measure:
   - Stem-to-guide clearance

Stem-to-guide clearance
Valve guide inside diameter ⓐ –
Valve stem diameter ⓑ

Out of specification → Replace valve guide.

Stem-to-guide clearance:
Intake:
0.010 ~ 0.031 mm
(0.0004 ~ 0.0015 in)
< Limit > : 0.08 mm (0.0031 in)
Exhaust:
0.025 ~ 0.052 mm
(0.0010 ~ 0.0020 in)
< Limit > : 0.10 mm (0.0039 in)

2. Replace:
   - Valve guide

Replacement steps:

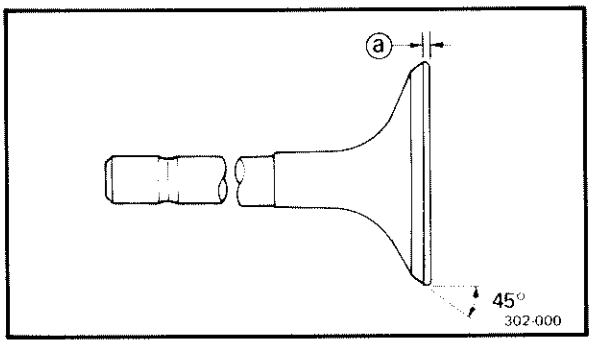
NOTE:
Heat the cylinder head in an oven to 100°C (212°F) to ease guide removal and installation and to maintain correct interference fit.

- Remove the valve guide using the valve guide remover ① .
- Install the valve guide (new) using the valve guide installer ② and valve guide remover ① .
- After installing the valve guide, bore the valve guide using the valve guide reamer ③ to obtain proper stem-to-guide clearance.

Valve guide remover:
YM-04116
90890-04116
Valve guide installer:
YM-04117
90890-04117
Valve guide reamer:
YM-04118
90890-04118

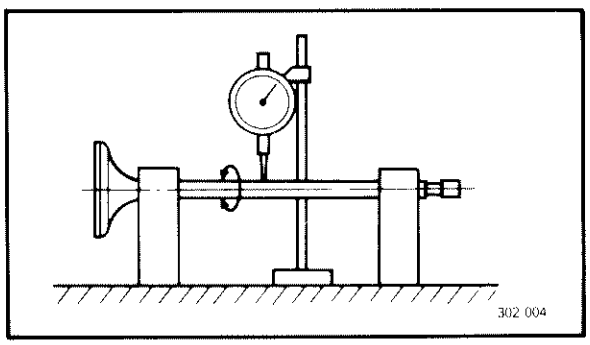
NOTE:
Reface the valve seat after replacing the valve guide.

3. Eliminate:
   - Carbon deposit
     (from valve face)
4. Inspect:
   - Valve face
     Pitting/Wear → Grind the face.
   - Valve stem end
     Mushroom shape or diameter larger than rest of stem → Replace.



5. Measure:
   - Margin thickness ⓐ
     Out of specification → Replace.

Margin Thickness:
Limit: 0.7 mm (0.0276 in)



6. Measure:
   - Runout (valve stem)
     Out of specification → Replace.

Runout:
Less than 0.02 mm (0.0008 in)

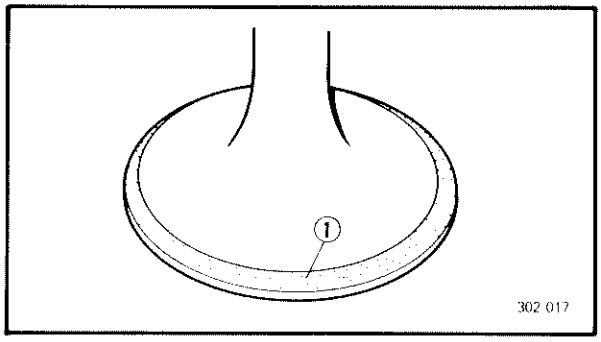
NOTE:
- Always replace the guide if the valve is replaced.
- Always replace the oil seal if the valve is removed.

VALVE SEAT

1. Clean:
   - Valve face
   - Valve seat

   Eliminate carbon deposit.
2. Inspect:
   - Valve seat

   Pitting/Wear → Reface valve seat.

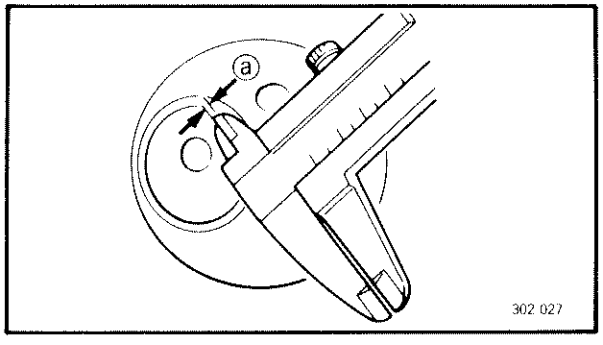


3. Measure:
   - Valve seat width ①

   Out of specification → Reface valve seat.

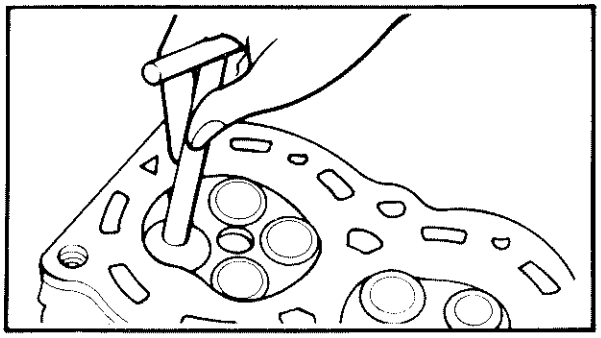
Valve seat width measurement steps:
- Apply the Mechanic's bluing dye (Dykem) ① to the valve face.
- Install the valve into the cylinder head.
- Press the valve through the valve guide and onto the valve seat to make a clear pattern.
- Remove the valve from the cylinder head.
- Measure the valve seat width ⓐ.

  When the valve seat and valve face make contact, bluing will be applied to the valve face.



	Valve seat width	Limit
Intake Exhaust	0.9 ~ 1.1 mm (0.035 ~ 0.043 in)	1.6 mm (0.063 in)

- If the valve seat width is too wide, too narrow, or seat has not centered. The valve seat must be refaced.

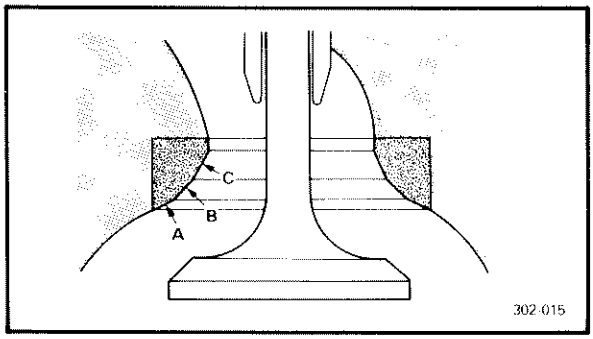


4. Reface:
   - Valve seat

   Use 20°, 45° and 60° Valve Seat Cutter.

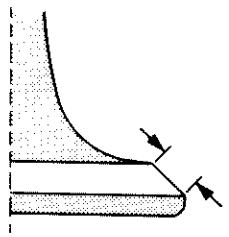
⚠ CAUTION:

Remove just enough material to achieve satisfactory seat.
When twisting cutter, keep and even downward pressure to prevent chatter marks.

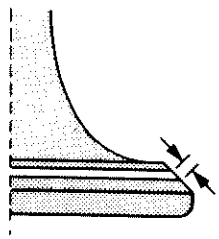


Cut sections as follows	
Section	Cutter
A	20°
B	45°
C	60°

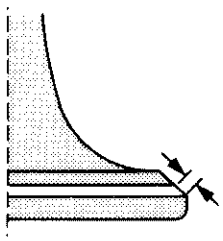
A



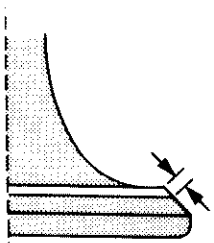
B



C



D



Valve seat refacing steps:

A Valve face indicates that valve seat is centered on valve face but is too wide.

Valve seat cutter set		Desired result
Use lightly	20° cutter	To reduce valve seat width to 1.0 mm (0.04 in)
	60° cutter	

B Valve seat is in the middle of the valve face but too narrow.

Valve seat cutter set		Desired result
Use	45° cutter	To achieve a uniform valve seat width of 1.0 mm (0.04 in)

C Valve seat is too narrow and right up near valve margin.

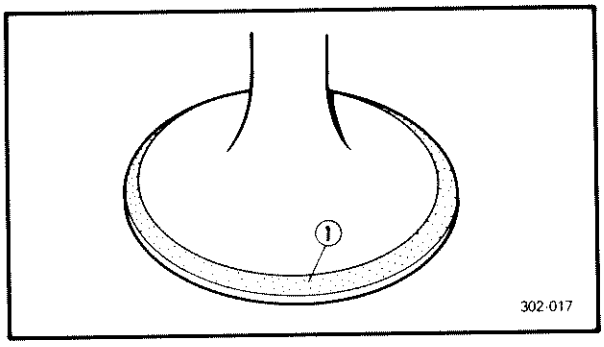
Valve seat cutter set		Desired result
Use	20° cutter	To center the seat and to achieve its width of 1.0 mm (0.04 in)
	45° cutter	

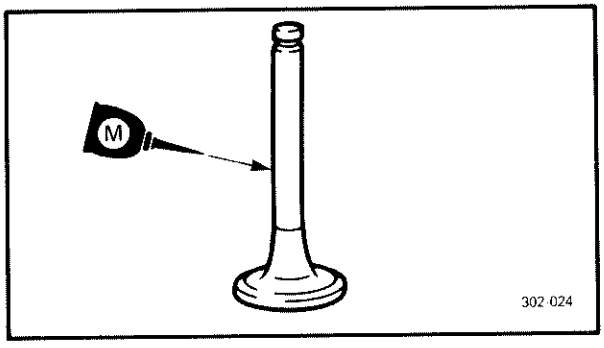
D Valve seat is too narrow and is located down near the bottom edge of the valve face.

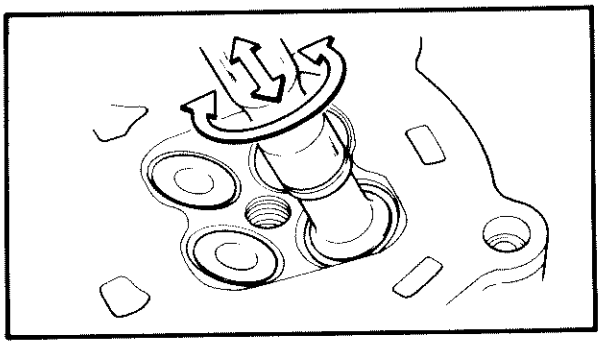
Valve seat cutter set		Desired result
Use	60° cutter, first	To center the seat and increase its width.
	45° cutter	

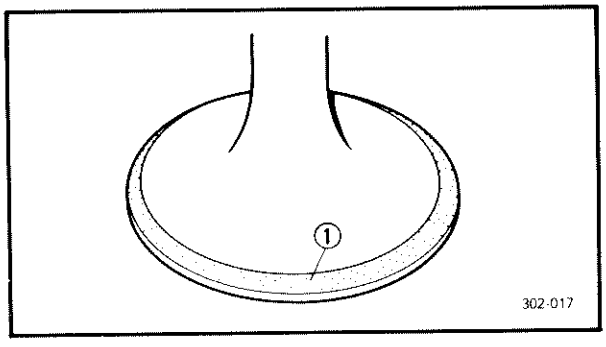
5. Lap:
   - Valve face
   - Valve seat

NOTE:
After refacing the valve seat or replacing the valve and valve guide, the valve seat and valve face should be lapped.









Valve lapping steps:
- Apply a coarse lapping compound ① to the valve face.

⚠ CAUTION:
Be sure no compound enteres the gap between the valve stem and guide.

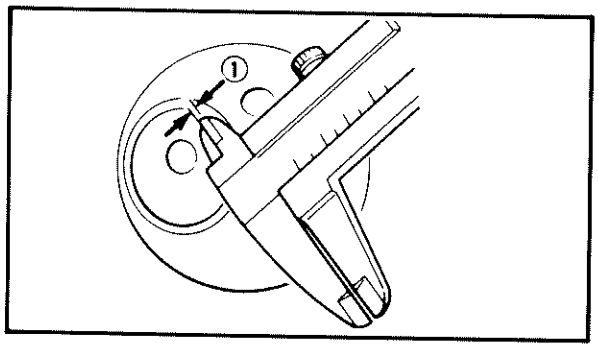
- Apply a molybdnum disulfide oil to the valve stem.
- Install the valve into the cylinder head.
- Turn the valve until the valve face and valve seat are evenly polished, then clean off all compound.

NOTE:
To obtain the best lapping result, lightly tap the valve seat while rotating the valve back and forth between your hand.

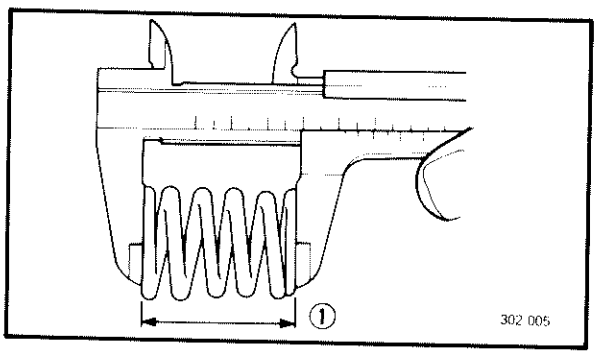
- Apply a fine lapping compound to the valve face and repeat the above steps.

NOTE:
Be sure to clean off all compound from the valve face and valve seat after every lapping operation.

- Apply the Mechanic's bluing dye (dykem) ① to the valve face.
- Install the valve into the cylinder head.



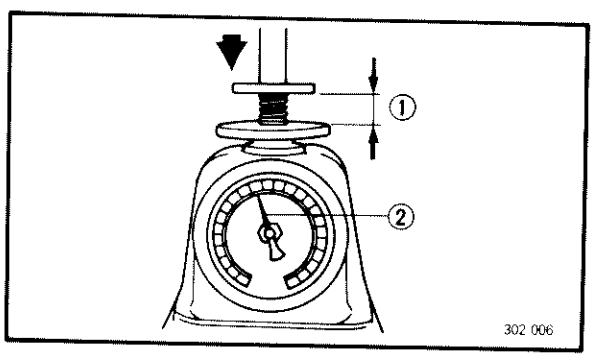
- Press the valve through the valve guide and onto the valve seat to make a clear pattern.
- Measure the valve seat width ① again. If the valve seat width is out of specification, reface and lap the valve seat.



VALVE SPRING

1. Measure:
   - Valve spring free length ①
     Out of specification → Replace.

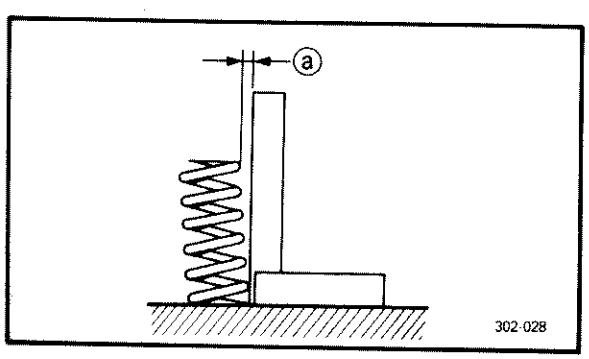
Valve spring free length:
43.15 mm (1.70 in)



2. Measure:
   - Valve spring installed force ②
     Out of specification → Replace.

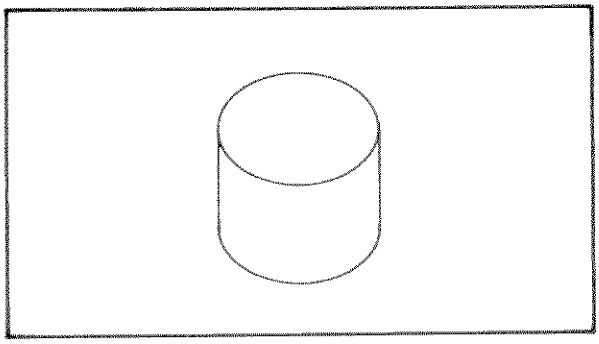
① Installed length

Valve spring installed force:	
①	②
37.5 mm (1.48 in)	14.2 ~ 16.4 kg (31.3 ~ 36.2 lb)



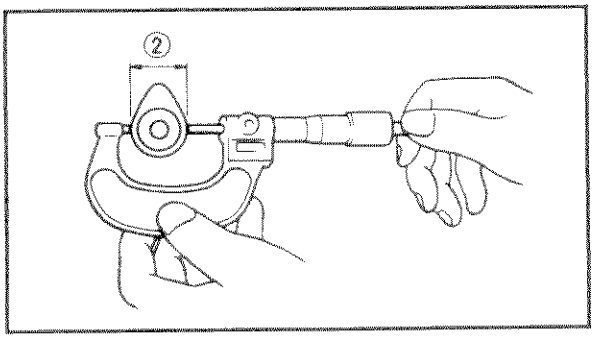
3. Measure:
   - Spring tilt ⓐ
     Out of specification → Replace.

Spring tilt:
Less than 1.8 mm (0.0709 in)



VALVE LIFTER

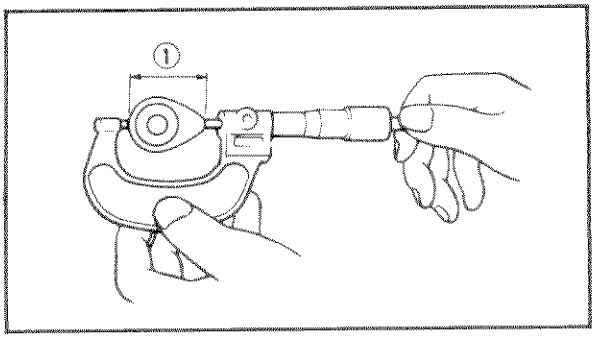
1. Inspect:
   - Valve lifters
     Scratches/Damage → Replace both lifters and camshaft case.



CAMSHAFT, TIMING CHAIN, AND CAM SPROCKET

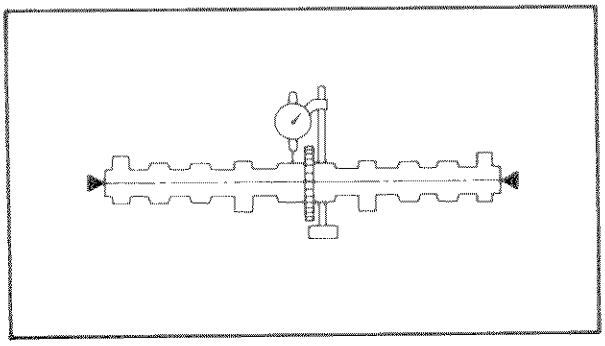
Camshaft

1. Inspect:
   - Cam lobes
     Pitting/Scratches/Blue discoloration → Replace.
2. Measure:
   - Cam lobes
     Use the Micrometer.
     Out of specification → Replace.



	Cam lobe 1 (Limit)	Cam lobe 2 (Limit)
Intake	32.51 mm (1.2799 in)	25.005 mm (0.9844 in)
Exhaust	32.21 mm (1.2681 in)	24.96 mm (0.9827 in)

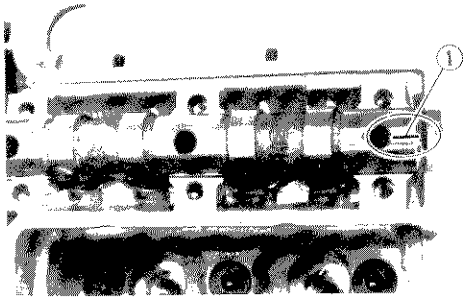
3. Measure:
   - Camshaft runout
     Use the Micrometer.
     Out of specification → Replace.



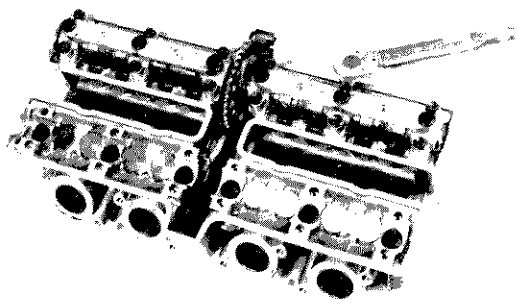
Camshaft runout limit:
0.03 mm (0.0012 in)

Camshaft/Cap clearance measurement

1. Install:
   - Camshaft (intake and exhaust)
2. Position:
   - Plastigage® ①
     Onto the camshaft.



Plastigage®:
P/N YU-33210

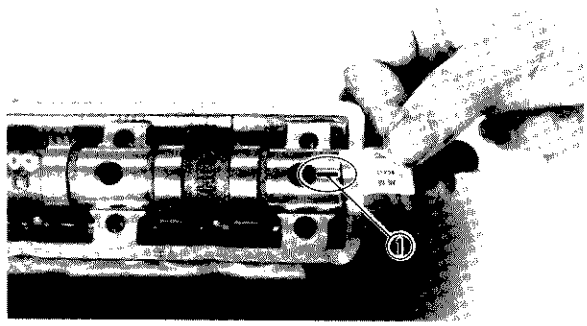


3. Install:
   - Dowel pins
   - Camshaft caps
4. Tighten:
   - Camshaft cap bolts

Bolts (camshaft cap):
10 Nm (1.0 m · kg, 7.2 ft · lb)

NOTE:
- Tighten the camshaft caps in a crisscross pattern from innermost to outer caps.
- Do not turn the camshaft when measuring clearance with the Plastigage®.

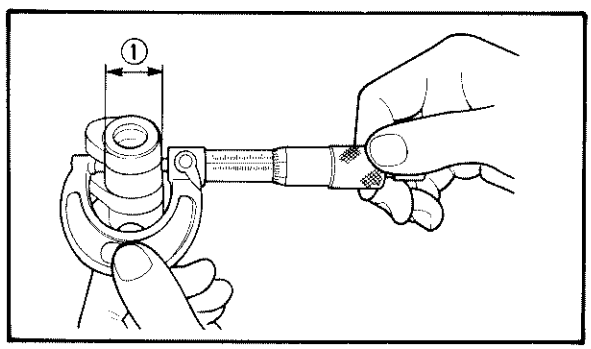
5. Remove:
   - Camshaft caps



6. Measure:
   - Width of Plastigage® ①

   Out of specification → Follow step 7.

Camshaft-to-cap clearance:
0.020 ~ 0.054 mm
(0.0008 ~ 0.0021 in)



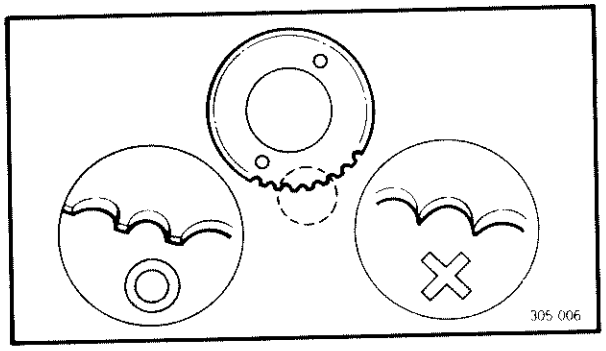
7. Measure:
   - Camshaft outside diameter ①

   Use a micrometer.
   Out of specification → Replace the camshaft.
   Within specification → Replace the cylinder head.

Camshaft outside diameter:
Standard: 22.967 ~ 22.980 mm
(0.9042 ~ 0.9047 in)
Cam cap inside diameter:
Standard: 23.000 ~ 23.021 mm
(0.9056 ~ 0.9063 in)

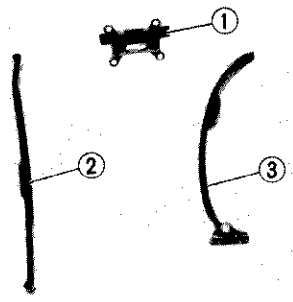
Timing chain

1. Inspect:
   - Timing chain
     Chain stretch/Cracks → Replace.



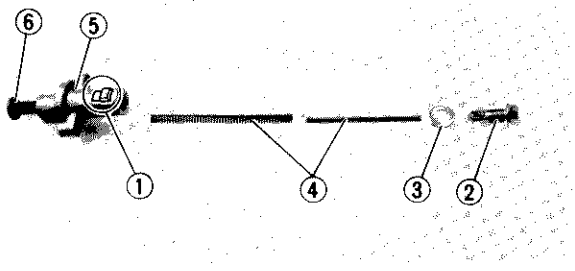
Cam sprockets

1. Inspect:
   - Cam sprockets
     Wear/Damage → Replace.



Timing chain guide

1. Inspect:
   - Timing chain guide (upper) ①
   - Timing chain guide (exhaust side) ②
   - Timing chain guide (intake side) ③
     Wear → Replace.



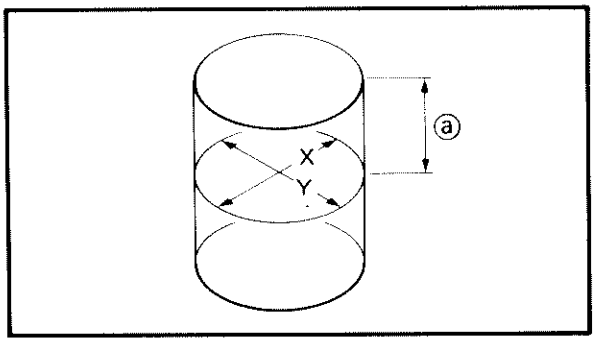
Timing chain tensioner

1. Check:
   - One-way cam ① operation
     Unsmooth operation → Replace.
2. Inspect:
   - All parts
     Damage/Wear → Replace.

② End plug
③ Washer
④ Springs
⑤ Tensioner body
⑥ Tensioner rod

CYLINDER AND PISTON

1. Inspect:
   - Cylinder and piston walls
     Vertical scratches → Rebore or replace cylinder and piston.
2. Measure:
   - Piston-to-cylinder clearance



Measurement steps:

First step:

- Measure the cylinder bore "C" with a cylinder bore gauge.

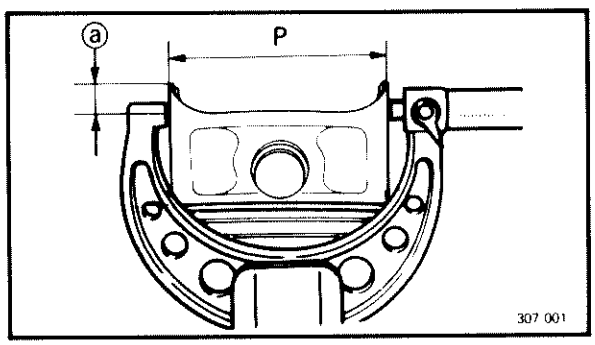
ⓐ 40 mm (1.57 in) from the cylinder top.

NOTE:

Measure the cylinder bore "C" in parallel to and at right angles to the crankshaft. Then, find the average of the measurements.

	Standard	Wear limit
Cylinder Bore "C"	59.00 ~ 59.01 mm (2.3228 ~ 2.3232 in)	59.15 mm (2.3288 in)

$$C = \frac{X + Y}{2}$$



- If out of specification, rebore or replace the cylinder, and replace the piston and piston rings as a set.

2nd step:

- Measure the piston skirt diameter "P" with a micrometer.

ⓐ 5 mm (0.20 in) from the piston bottom edge.

	Piston size P
Standard	58.940 ~ 58.955 mm (2.321 ~ 2.322 in)
Oversize 2	59.5 mm (2.343 in)

- If out of specification, replace piston and piston rings as a set.

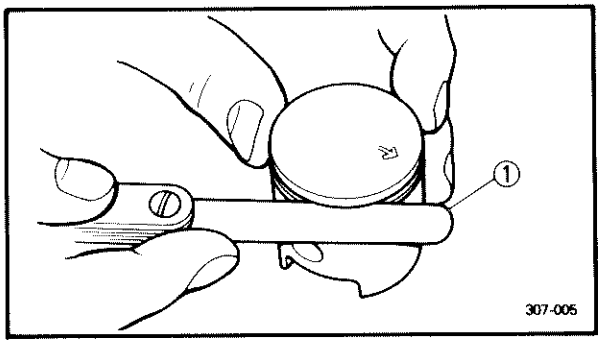
3rd step:

- Calculate the piston-to-cylinder clearance with following formula:

Piston-to-cylinder clearance =
Cylinder bore "C" –
Piston skirt diameter "P"

- If out of specification, rebore or replace cylinder, and replace piston and piston rings as a set.

Piston-to-cylinder clearance:
0.045 ~ 0.070 mm
(0.0018 ~ 0.0028 in)
Limit: 0.15 mm (0.006 in)



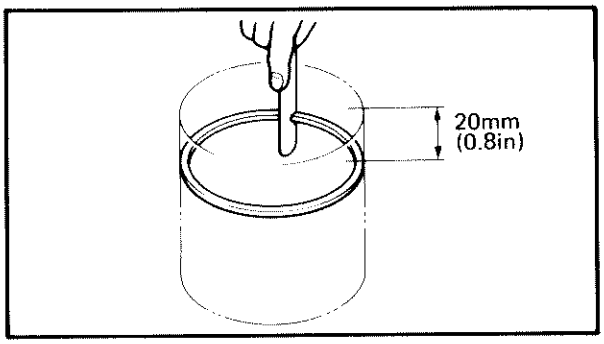
PISTON RING AND PISTON PIN

Piston ring

1. Measure:
   - Side clearance
     Use the feeler gauge ①.
     Out of specification → Replace the piston and/or rings.

NOTE:
Eliminate the carbon deposits from the piston ring grooves and rings before measuring the side clearance.

	Side clearance:	
	Standard	Limit
Top ring	0.03 ~ 0.07 mm (0.0012 ~ 0.0028 in)	0.10 mm (0.004 in)
2nd ring	0.02 ~ 0.06 mm (0.0008 ~ 0.0024 in)	0.10 mm (0.004 in)

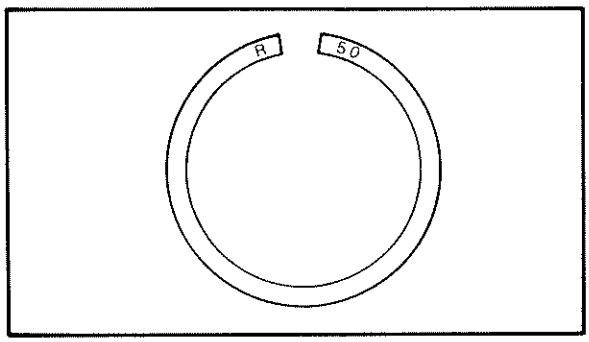


2. Position:
   - Piston ring
     Into cylinder.

NOTE:
Insert the ring into the cylinder, and push it approximately 20 mm (0.8 in) into the cylinder. Push the ring with the piston crown so that the ring will be at a right angle to the cylinder bore.

3. Measure:
   - End gap
     Use a feeler gauge.
     Out of specification → Replace.

	End Gap (Installed):
	Standard
Top ring	0.15 ~ 0.30 mm (0.0059 ~ 0.0118 in)
2nd ring	0.15 ~ 0.30 mm (0.0059 ~ 0.0118 in)
Oil control (Rails)	0.2 ~ 0.6 mm (0.0079 ~ 0.0236 in)

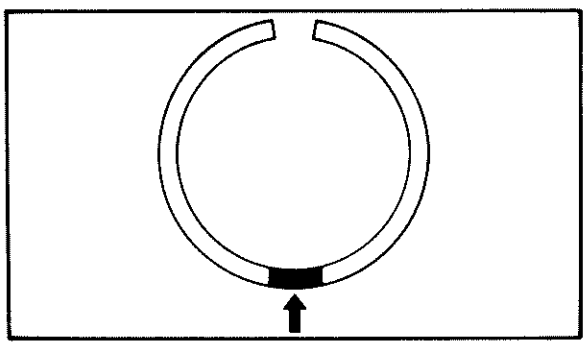


Piston ring oversize

- Top and 2nd piston ring

Oversize top and middle ring size is stamped on the top of ring.

Oversize 2	0.50 mm (0.0197 in)



- Oil control ring

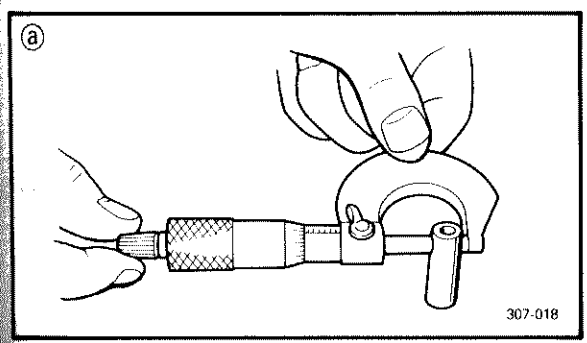
Expander spacer of bottom ring (oil control ring) is color-coded to identify sizes.

Size	Color
Oversize 2	Red

PISTON PIN

1. Inspect:
   - Piston pin

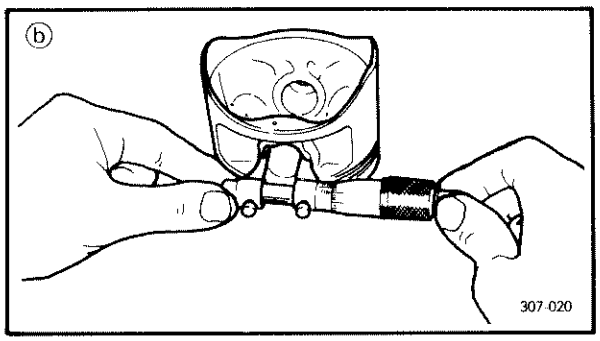
   Blue discoloration/Groove → Replace, then inspect lubrication system.

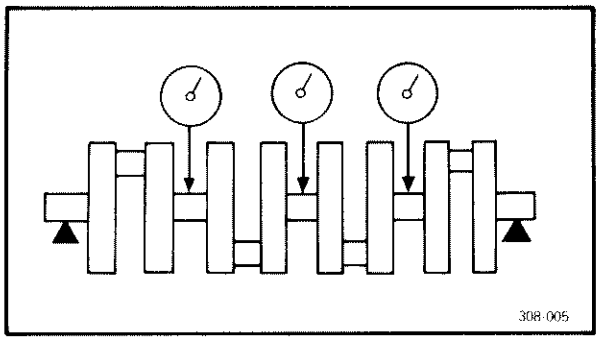


2. Measure:
   - Outside diameter ⓐ (piston pin)

   Out of specification → Replace.

Outside diameter (piston pin):
15.991 ~ 16.000 mm
(0.6296 ~ 0.6300 in)





3. Measure:
   - Piston pin-to-piston clearance ⓑ
   Out of specification → Replace piston.

Piston pin-to-piston clearance = bore size (piston pin) ⓑ − outside diameter (piston pin) ⓐ

Piston pin-to-piston clearance:
0.002 ~ 0.022 mm
(0.0001 ~ 0.0009 in)
< Limit: 0.07 mm (0.003 in) >

CRANKSHAFT AND CONNECTING ROD

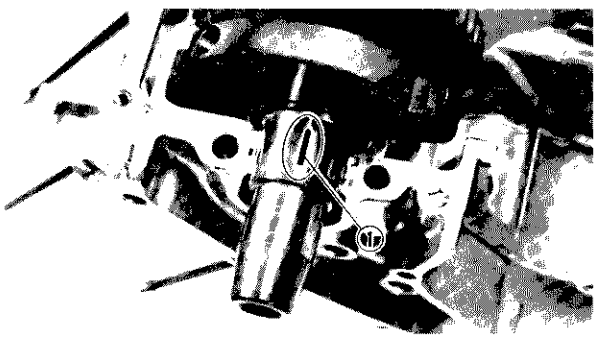
1. Measure:
   - Runout (crankshaft)
   Out of specification → Replace.

Runout:
Less than 0.03 mm (0.0012 in)

2. Inspect:
   - Crankshaft bearing surfaces
   Wear/Scratches → Replace.

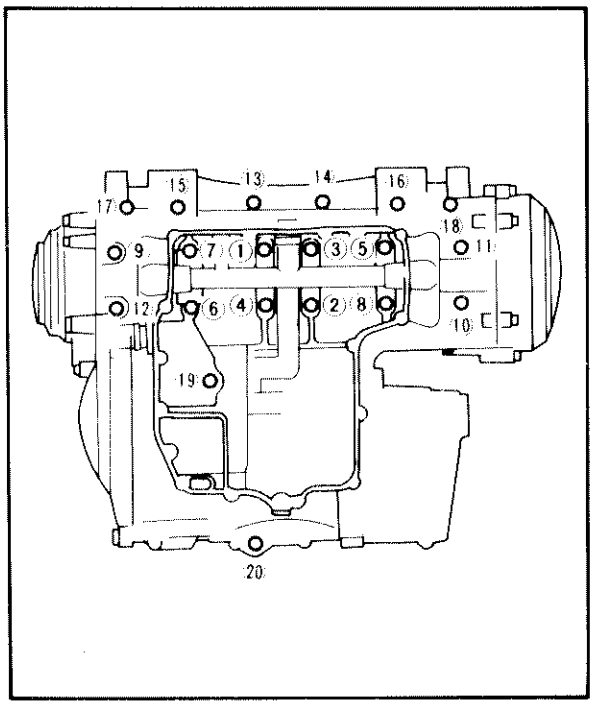
Main journal oil clearance

1. Clean all parts.
2. Position:
   - Crankcase half (upper)
   Place it on a bench in an upside down position.
3. Install:
   - Bearings
   (into upper crankcase).
   - Crankshaft
4. Attach:
   - Plastigage® ①
   (onto crankshaft journal surface).



NOTE:
Do not turn the crankshaft until clearance measurement has been completed.

5. Install:
   - Bearings
   (into lower crankcase).
   - Crankcase (lower)



6. Tighten:
   - Bolts

⚠ CAUTION:

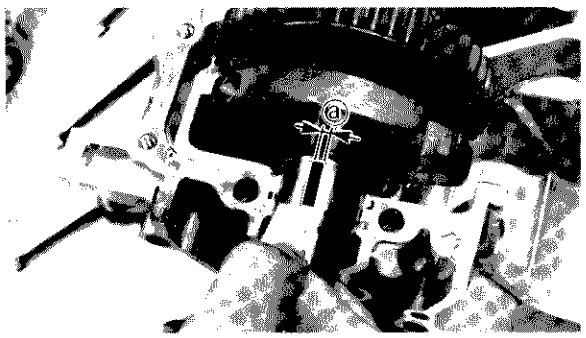
Tighten the bolts to specified torque. Tightening sequence is casted on the crankcase.

9 mm (0.35 in) bolt:
32 Nm (3.2 m · kg, 23 ft · lb)

7. Remove:
   - Bolts

   Reverse assembly procedure.
   - Crankcase (Lower)

   Use care in removing.



8. Measure:
   - Plastigage width ⓐ

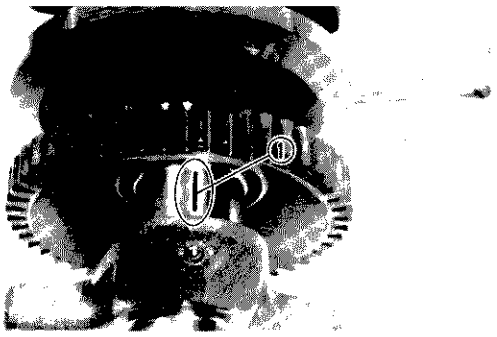
   Out of specification → Replace the bearings; replace the crankshaft if necessary.

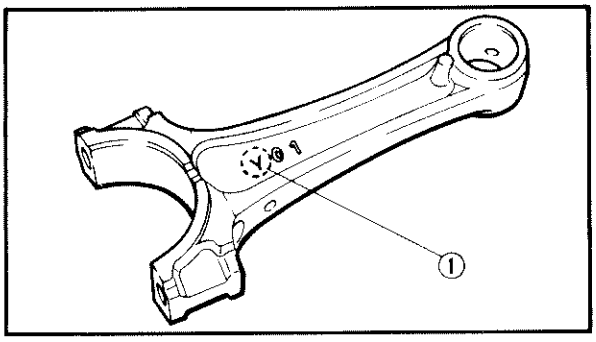
Main journal oil clearance:
0.020 ~ 0.044 mm
(0.0008 ~ 0.0017 in)

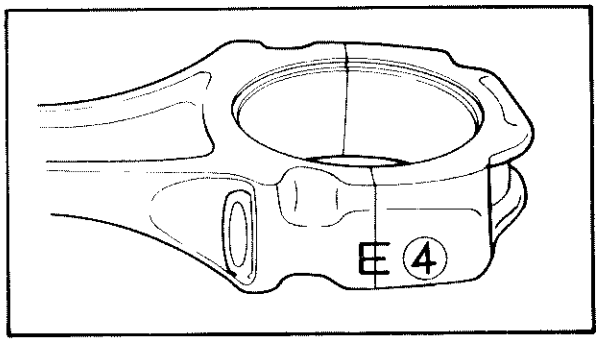
Connecting rod bearings

1. Inspect:
   - Bearings

   Burns/Flaking/Roughness/Scratches → Replace.







Connecting Rod Oil Clearance

1. Clean all parts thoroughly.
2. Install:
   - Connecting rod bearings (into connecting rod and cap)
3. Attach:
   - Plastigage® ①
     (onto crank pin)
4. Install:
   - Connecting rod
   - Connecting rod cap

NOTE:
- Be sure the "Y" marks ① on the connecting rods face toward left crankshaft end .
- Be sure the letters on both components align to form a perfect character.

5. Lubricate:
   - Bolt threads (Connecting rod)
   - Nut seats (Connecting rod)

Molybdenum Disulfide Grease

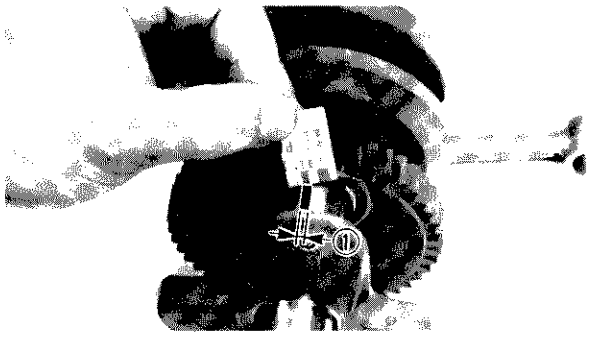
6. Tighten:
   - Nuts (connecting rod cap)

NOTE:
Do not turn the connecting rod until the clearance measurement has been completed.

⚠ CAUTION:

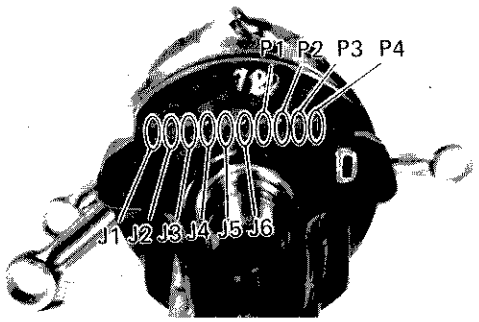
Tighten to full torque specification without pausing. Apply continuous torque between 1.2 and 2.3 m·kg. Once you reach 1.2 m·kg DO NOT STOP TIGHTENING until final torque is reached. If tightening is interrupted between 1.2 and 2.3 m·kg, loosen nut to less than 1.2 m·kg, and start again.

Nuts (connecting rod):
36 Nm (3.6 m·kg, 25 ft·lb)



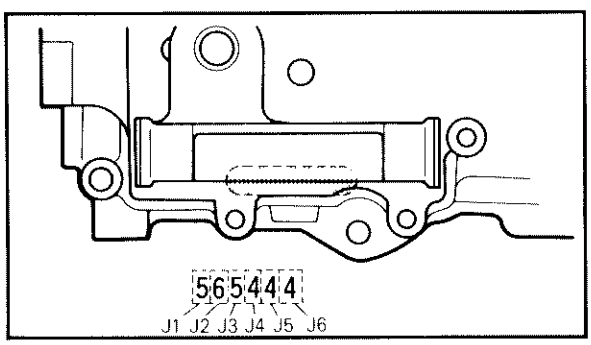
7. Remove:
   - Connecting rod cap
     Use care in removing.
8. Measure:
   - Width of Plastigage® ①
     Out of specification → Replace the bearings and/or replace the crankshaft if necessary.

Crank pin oil clearance:
0.032 ~ 0.056 mm
(0.0013 ~ 0.0022 in)

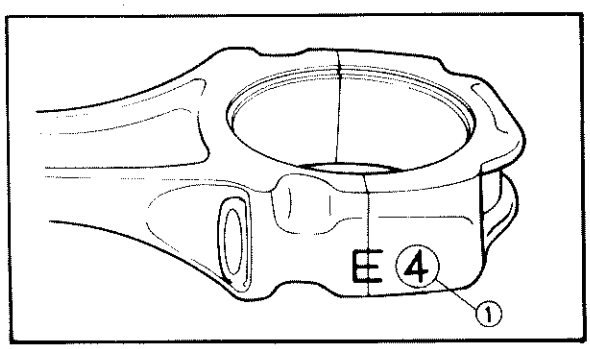


Crankshaft main journal and crank pin bearing selection

- Numbers used to indicate crankshaft journal sizes are stamped on the LH crankweb. The first five (5) are main journal bearing numbers, starting with the left journal. The four (4) crank pin bearing numbers follow in the same sequence.



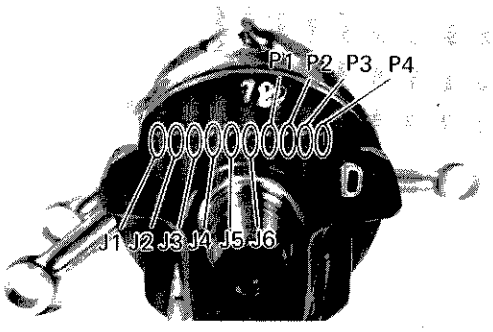
- The upper crankcase half is numbered J1, J2, J3, J4 and J5 on the rear right bosse as shown.



- The numbers are stamped in ink on the rod cap ① .

BEARING COLOR CODE	
No. 1	Blue
No. 2	Black
No. 3	Brown
No. 4	Green
* No. 5	Yellow

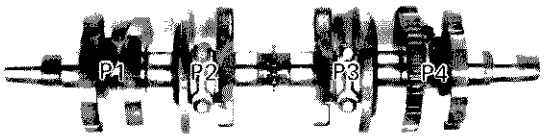
* No. 5 applies only to the main journal bearing selection.



Example 1:
Selection of the main journal bearings:
- If the crankcase J1 and crankshaft J1 sizes are No. 4 and No. 1, respectively, the bearing size No. is:

Bearing Size No. =
Crankcase No. – Crankshaft No. =
4 – 1 = 3 (Brown)

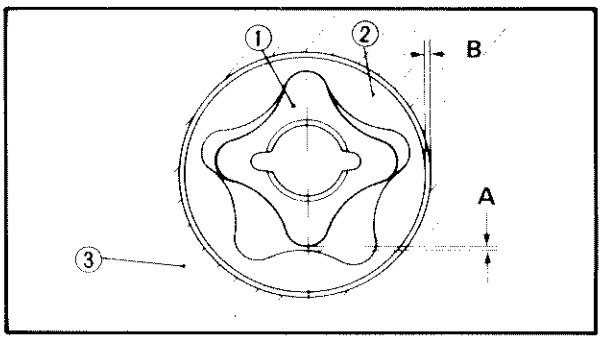
BEARING COLOR CODE	
No. 1	Blue
No. 2	Black
No. 3	Brown
No. 4	Green
No. 5	Yellow



Example 2:
Selection of the crank pin bearing:
- If the connecting rod P1 and crankshaft P1 sizes are No. 5 and No. 1, respectively, the bearing size No. is:

Bearing Size No. =
Connecting rod No. – Crankshaft No. =
5 – 1 = 4 (Green)

BEARING COLOR CODE	
No. 1	Blue
No. 2	Black
No. 3	Brown
No. 4	Green



OIL PUMP

1. Measure:
   - Tip clearance "A"
     Between the inner rotor ① and the outer rotor ② .
   - Side clearance "B"
     Between the outer rotor ② and the pump housing ③ .
     Use the filler gauge and straight edge.
     Out of specification → Replace the oil pump assembly.

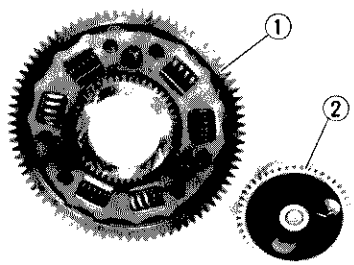
Tip clearance "A" limit:
0.15 mm (0.006 in)
Side clearance "B" limit:
0.15 mm (0.006 in)

2. Lubricate:
   - Inner rotors
   - Outer rotors
   - Oil seal
   - Pump shaft

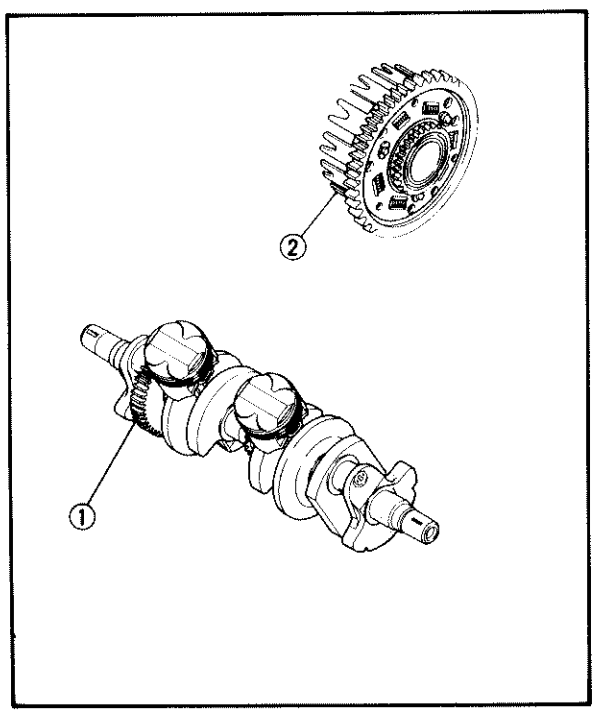
SAE 10W30 motor oil

3. Install:
   Reverse removal procedure.

NOTE:
Align the pins in the pump shaft and the groove on the inner rotors dualing assembly.



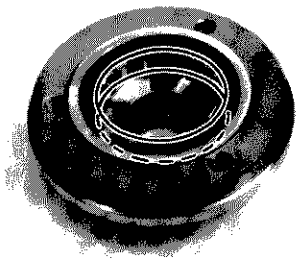
4. Check:
   - Oil pump operation
     With a finger.
     Unsmooth operation → Repeat step 2. or replace.
5. Inspect:
   - Oil pump drive gear ①
   - Oil pump driven gear ②
     Wear/Cracks/Damage → Replace.



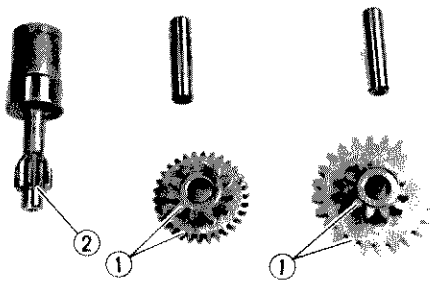
PRIMARY DRIVE

1. Inspect:
   - Primary drive gear (crank shaft) ①
   - Primary driven gear ②
     Wear/Damage → Replace both gears.
     Excessive noises during operation → Replace both gears.

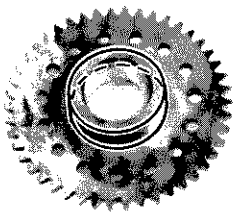
STARTER DRIVES



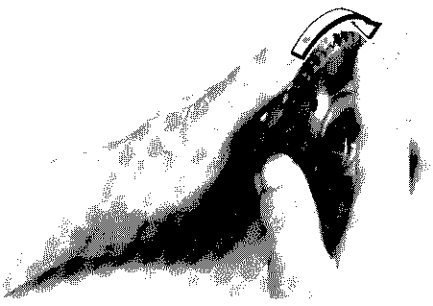
1. Inspect:
   - Starter clutch roller
     Wear/Damage → Replace.



2. Inspect:
   - Starter idle gear teeth ①
   - Starter drive gear teeth ②
     Burrs/Chips/Roughness/Wear → Replace.



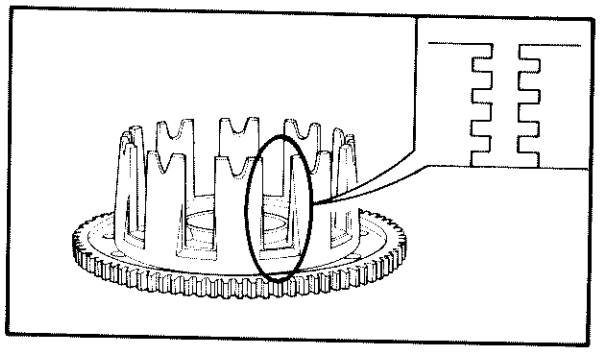
3. Inspect:
   - Contacting surfaces (starter clutch gear)
     Pitting/Wear/Damage → Replace.



4. Check:
   - Starter clutch operation

Checking steps:

- Install the starter clutch gear to the starter clutch, and hold the starter clutch.
- When turning the starter clutch gear clockwise the starter clutch and the wheel gear should be engaged.
  If not, the starter clutch is faulty. Replace it.
- When turning the starter clutch gear counterclockwise, the starter clutch gear should turn freely.
  If not, the starter clutch is faulty. Replace it.

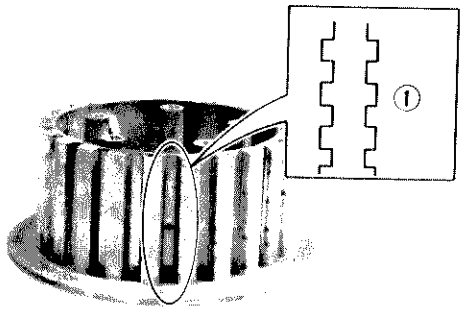


CLUTCH

Clutch Housing

1. Inspect:
   - Dogs on the housing
     Cracks/Wear/Damage → Deburr or replace.
   - Clutch housing bearing
     Chafing/Wear/Damage → Replace.

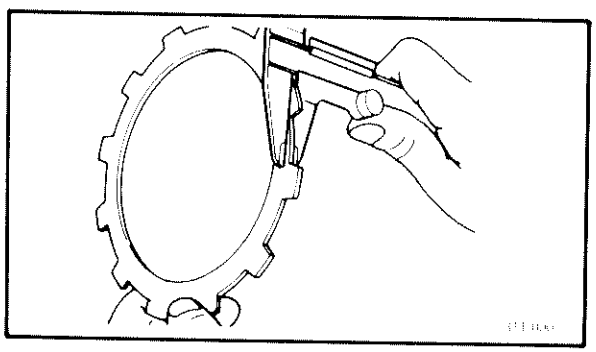
NOTE:
Wear on the friction plate dogs of the clutch housing will cause an erratic operation.



Clutch Boss

1. Inspect:
   - Clutch boss splines ①
     Scoring/Wear/Damage → Replace clutch boss assembly.

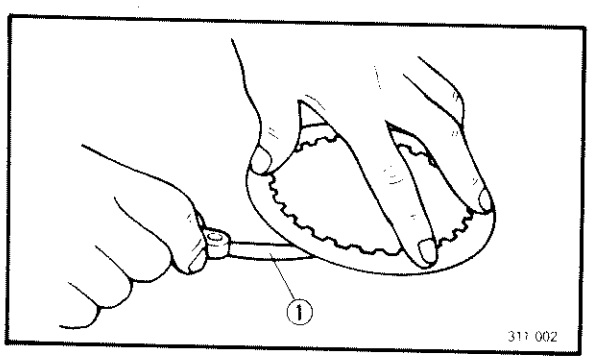
NOTE:
Scoring on the clutch plate splines will cause erratic operation.



Friction Plates

1. Inspect:
   - Friction plate
     Damage/Wear → Replace the friction plates as a set.
2. Measure:
   - Friction plate thickness
     Measure at all four points.
     Out of specification → Replace the friction plates as a set.

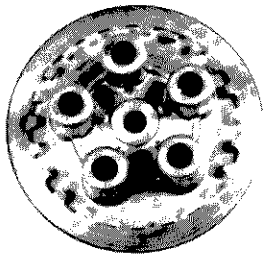
Wear limit:
2.8 mm (0.11 in)



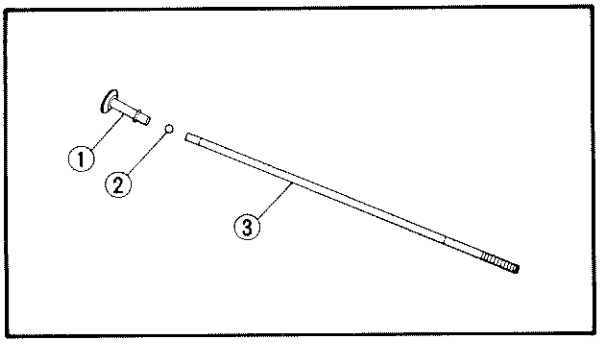
Clutch Plates

1. Measure:
   - Clutch plate warpage
     Use the surface plate and feeler gauge ①.
     Out of specification → Replace.

Warp limit:
0.1 mm (0.004 in)

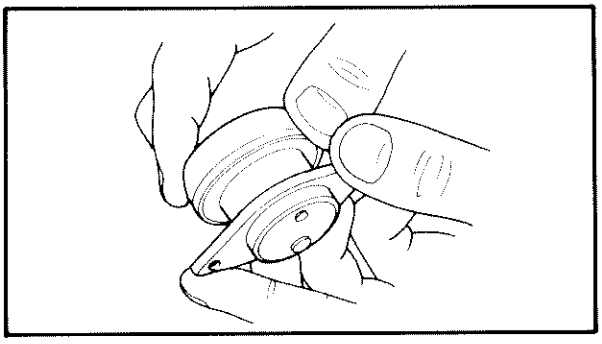


2. Inspect:
   - Pressure plate
     Damage → Replace.



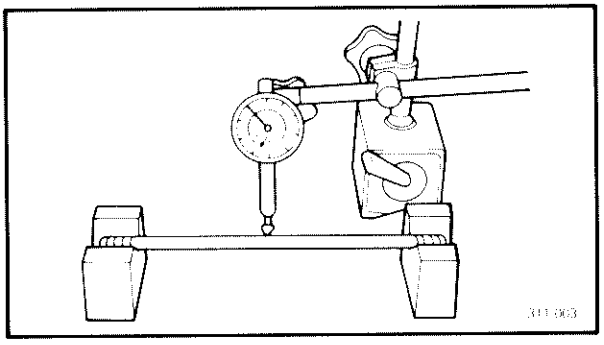
Push Rod

1. Inspect:
   - Push rod 1 ①
   - Boll ②
   - Push rod 2 ③
     Wear/Cracks/Damage → Replace.



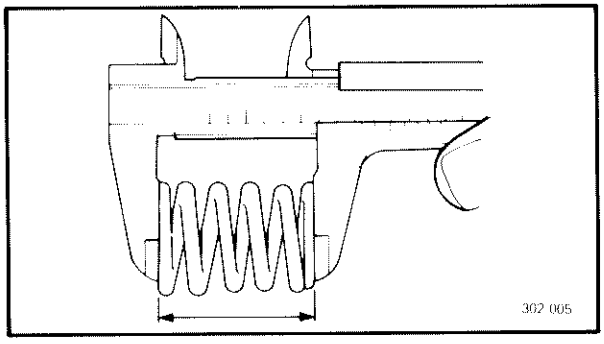
Push lever assembly and push rod

1. Inspect:
   - Push lever assembly
     Unsmooth → Replace.



2. Measure:
   - Push rod runout
     Use the V-Blocks and dial gauge.
     Out of specification → Replace.

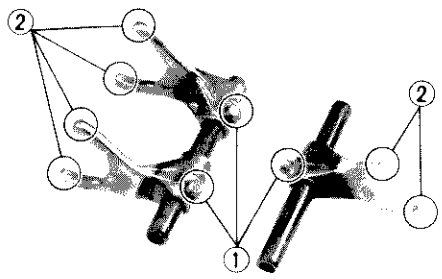
Bending limit:
0.5 mm (0.020 in)



Clutch spring

1. Measure:
   - Clutch spring free length
     Out of specification → Replace the springs as a set.

Clutch Spring Minimum Free Length:
32.6 mm (1.28 in)

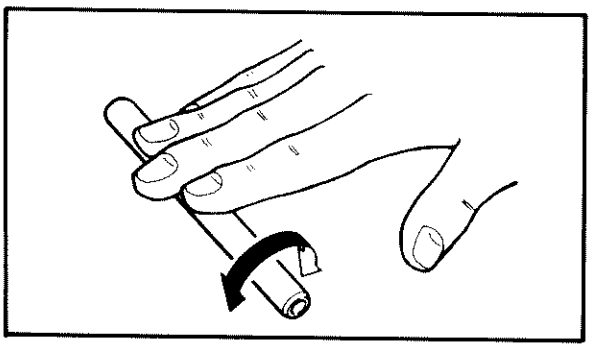


TRANSMISSION

Shift Fork

1. Inspect:
   - Shift fork cam follower ①
   - Shift fork pawl ②

   Wear/Chafing/Bends/Damage → Replace.

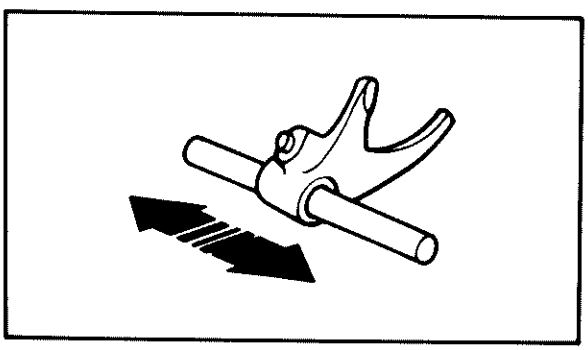


2. Inspect:
   - Guide bar

   Roll the guide bar on a flat surface.
   Bends → Replace.

⚠ WARNING:

Do not attempt to straighten a bent guide bar.



3. Check:
   - Shift fork movement

   On its guide bar.
   Unsmooth operation → Replace the fork and/guide bar.

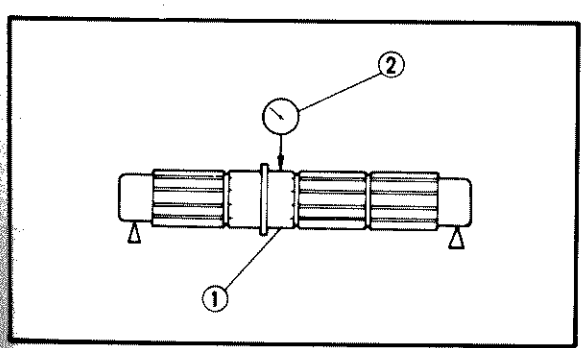
Shift Cam

1. Inspect:
   - Shift cam grooves

   Wear/Damage/Scratches → Replace.
   - Shift cam segment

   Damage/Wear → Replace.
   - Shift cam bearing

   Pitting/Damage → Replace.

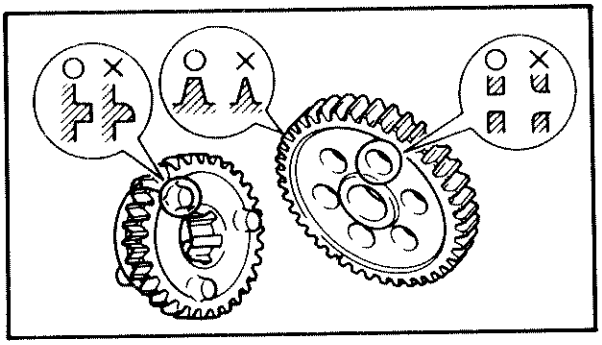


Main and Drive Axles

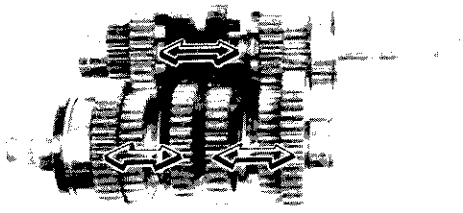
1. Measure:
   - Axle runout (main and drive) ①

   Use the centering device and dial gauge ②.
   Out of specification → Replace.

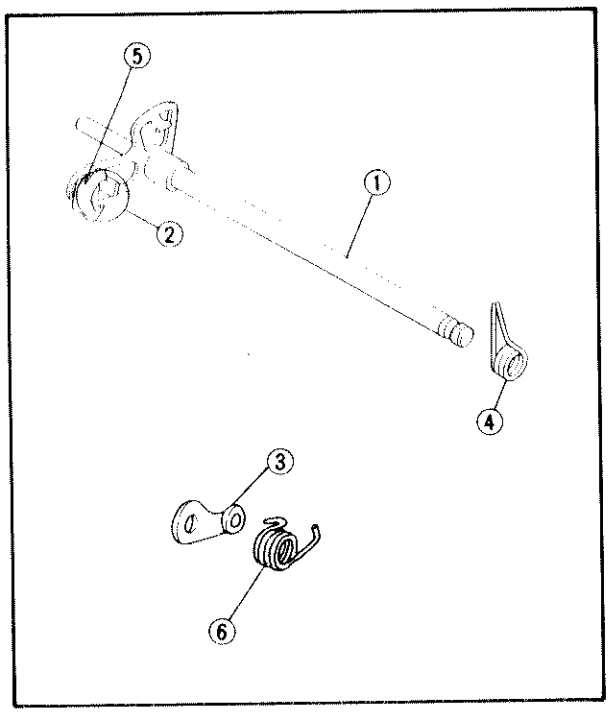
Runout limit:
0.08 mm (0.0031 in)



2. Inspect:
   - Gear teeth
     Blue discoloration/Pitting/Wear → Replace.
   - Mated dogs
     Rounded edges/Cracks/Missing portions → Replace.

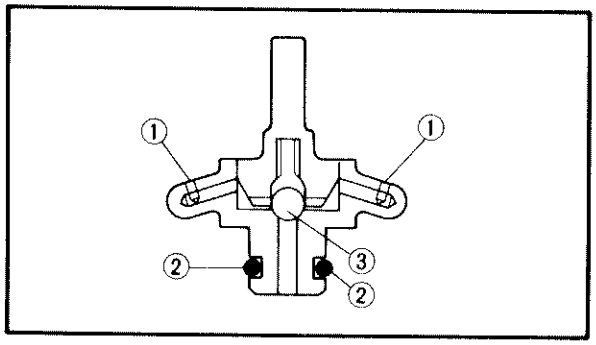


3. Check:
   - Proper gear engagement (each gear)
     (to its counter part)
     Incorrect → Reassemble.
   - Gear movement
     Roughness → Replace.
4. Inspect:
   - Circlips
     Damage/Looseness/Bends → Replace.



SHIFT SHAFT AND STOPPER LEVER

1. Inspect:
   - Shift shaft ①
   - Shift pawls ②
     Bend/Wear/Damage → Replace.
2. Inspect:
   - Stopper lever ③
     Roller turns roughly → Replace.
     Bend/Damage → Replace.
3. Inspect:
   - Return spring (shift shaft) ④
   - Return spring (shift pawls) ⑤
   - Return spring (stopper lever) ⑥
     Wear/Damage → Replace.



OIL-JET NOZZLE

1. Check:
   - Oil-Jet nozzles ①
   - O-rings ②
   - Check ball ③

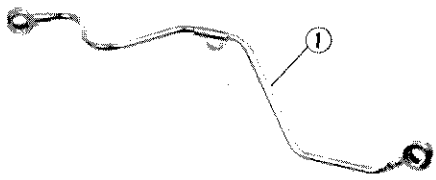
   Damage/Wear → Replace.
   - Oil jet passage

   Clog → Blow out with compressed air.

RELIEF VALVE AND PIPE

1. Check:
   - Relief valve body
   - Cover
   - Spring
   - O-ring

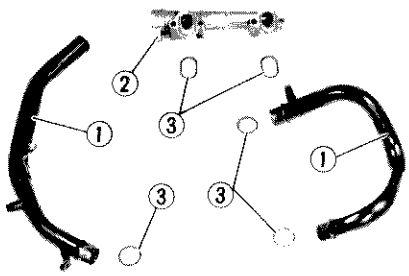
   Damage/Wear → Replace.



2. Check:
   - Oil pipe ①

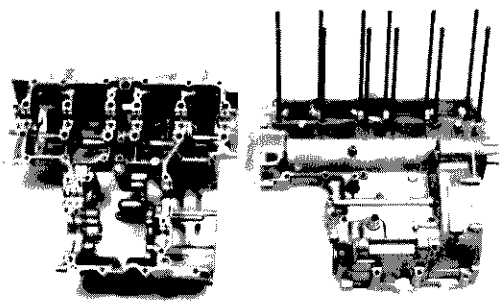
   Damage → Replace.

   Comtamination → Wash and blow out the passage.



3. Check:
   - Water pipe ①
   - Water jacket joint ②
   - O-rings ③

   Damage → Replace.

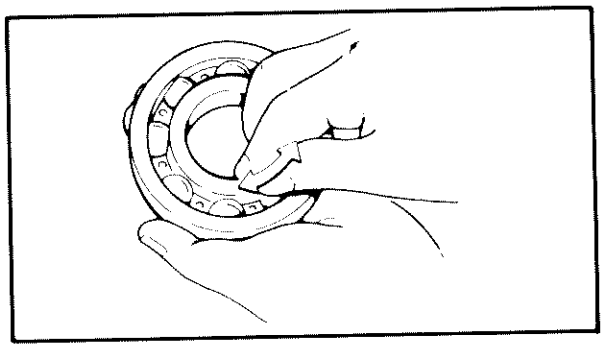


CRANKCASE

1. Thoroughly wash the case halves in mild solvent.
2. Clean all the gasket mating surfaces and crankcase mating surfaces thoroughly.
3. Inspect:
   - Crankcase

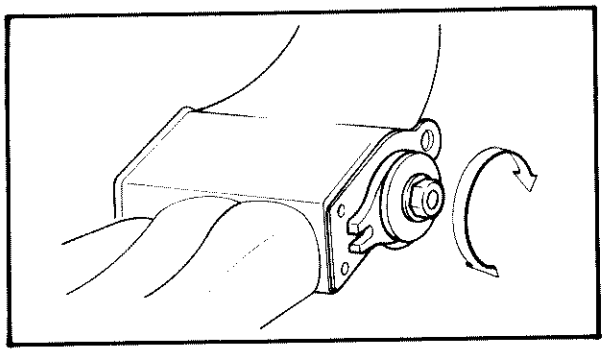
   Cracks/Damage → Replace.
   - Oil delivery passages

   Clog → Blow out with compressed air.



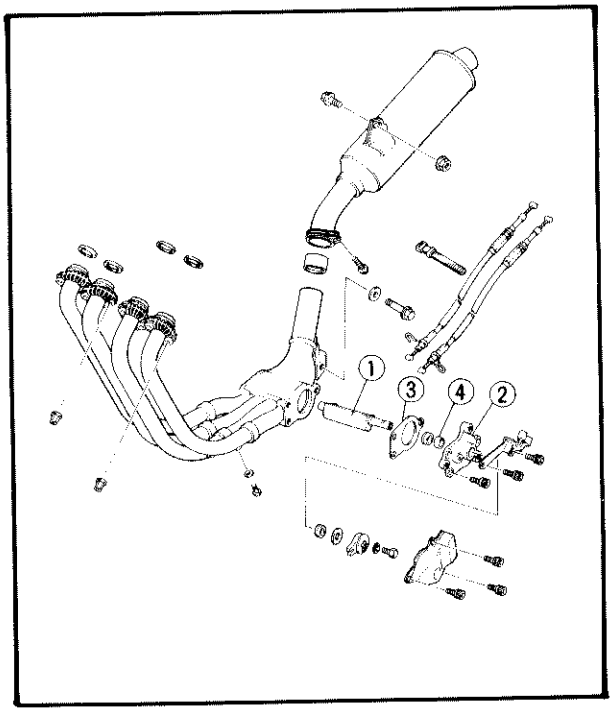
BEARING AND OIL SEAL

1. Inspect:
   - Bearings
     Clean and lubricate, then rotate inner race with finger.
     Roughness → Replace the bearing (see Removal).
2. Inspect:
   - Oil seals
     Damage/Wear → Replace the (see Removal).



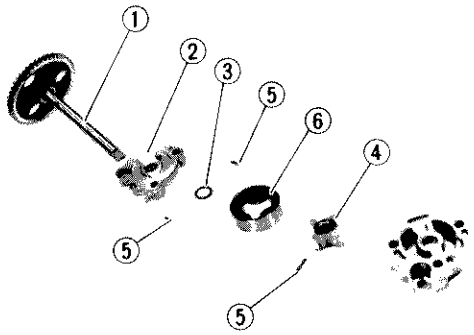
EXUP VALVE AND CABLES (FZR600WC ONLY)

1. Check:
   - EXUP valve smooth movement
     Sticks → Repair or replace.
   - EXUP cables
     Sticks/Damage → Replace.



2. Inspect:
   - Valve (EXUP) ①
   - Housing (valve) ②
   - Gasket (steel) ③
     Wear/Cracks/Damage → Replace.
   - Bush ④
     Wear → Replace.

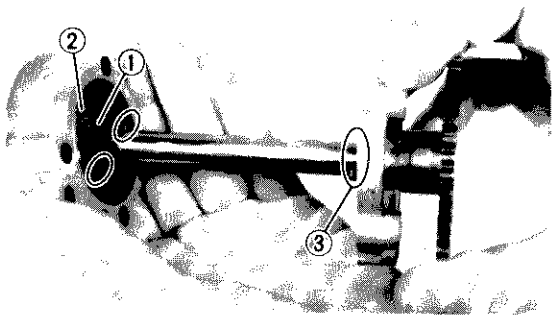
NOTE:
When installing the valve (EXUP), apply the molybdenum disulfied grease on the valve.



ENGINE ASSEMBLY AND ADJUSTMENT

INNER ROTOR (OIL PUMP)

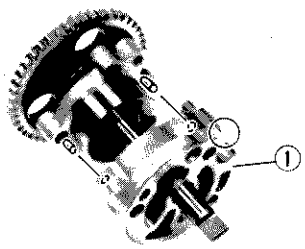
1. Install:
   - Pump shaft ①
   - Pump cover ②
   - Washer ③
   - Inner rotor ④
   - Pin ⑤
   - Outer rotor ⑥



NOTE:

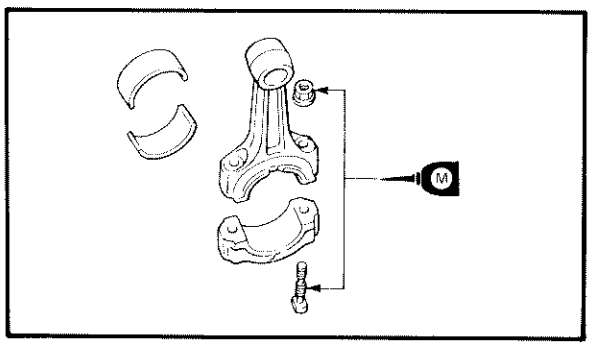
Insert the inner rotor ① into the outer rotor ②. Then with the pump shaft dowel pin ③ in the inner rotor slit.

2. Install:
   - Pump housing ①



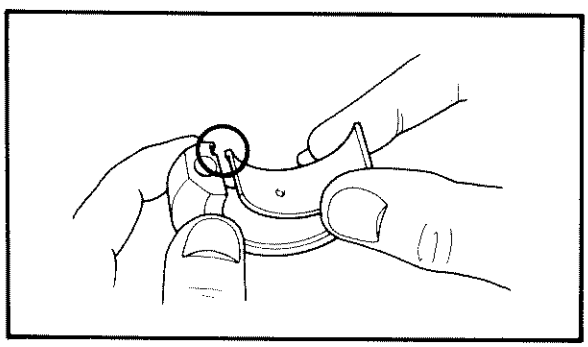
CONNECTING ROD

1. Clean:
   - Crankshaft
   - Connecting rods
2. Install:
   - Connecting rod bearings
     (into the connecting rod and cap.)



NOTE:

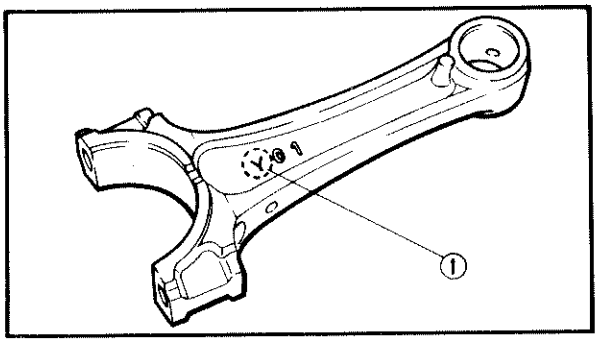
- Align the projection of bearing with the groove of cap.
- Identify each bearing position very carefully so that it can be reinstalled in its original place.



3. Lubricate:
   - Connecting rod bolt threads
   - Connecting rod nuts

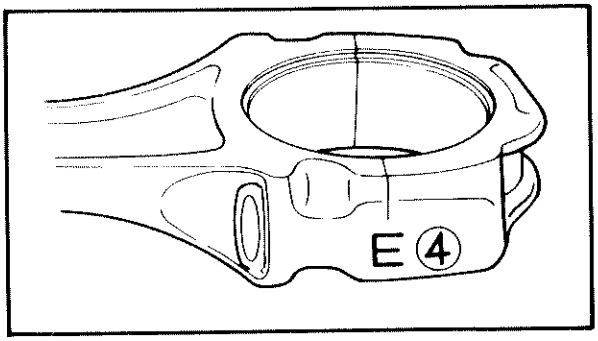
Molybdenum disulfide oil

4. Apply engine oil to the crankshaft pins.



5. Install:
   - Connecting rods
   - Connecting rod caps

NOTE:
- The stamped "Y" mark on the connecting rods ① should face towards the left side of the crankcase.
- Be sure the letter on both components align to form a perfect character.



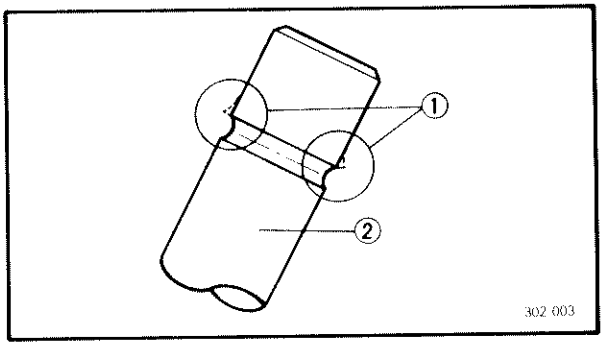
6. Install:
   - Connecting rod bolts

   Align the bolt head ① and connecting rod cap.
7. Tighten:
   - Connecting rod nuts

⚠ CAUTION:

Tighten to full torque specification without pausing. Apply continuous torque between 1.2 and 2.3 m·kg. Once you reach 1.2 m·kg. DO NOT STOP TIGHTENING until final torque is reached. If the tightening is interrupted between 1.2 and 2.3 m·kg, loosen the nut to less than 1.2 m·kg and start again.

	Nut (connecting rod): 23 Nm (2.3 m·kg, 17 ft·lb)



VALVE PAD AND VALVE

NOTE:

Deburr any deformed valve stem end. Use an oil stone to smooth the stem end.

①Deburr
②Valve stem

1. Eliminate:
   - Carbon deposit

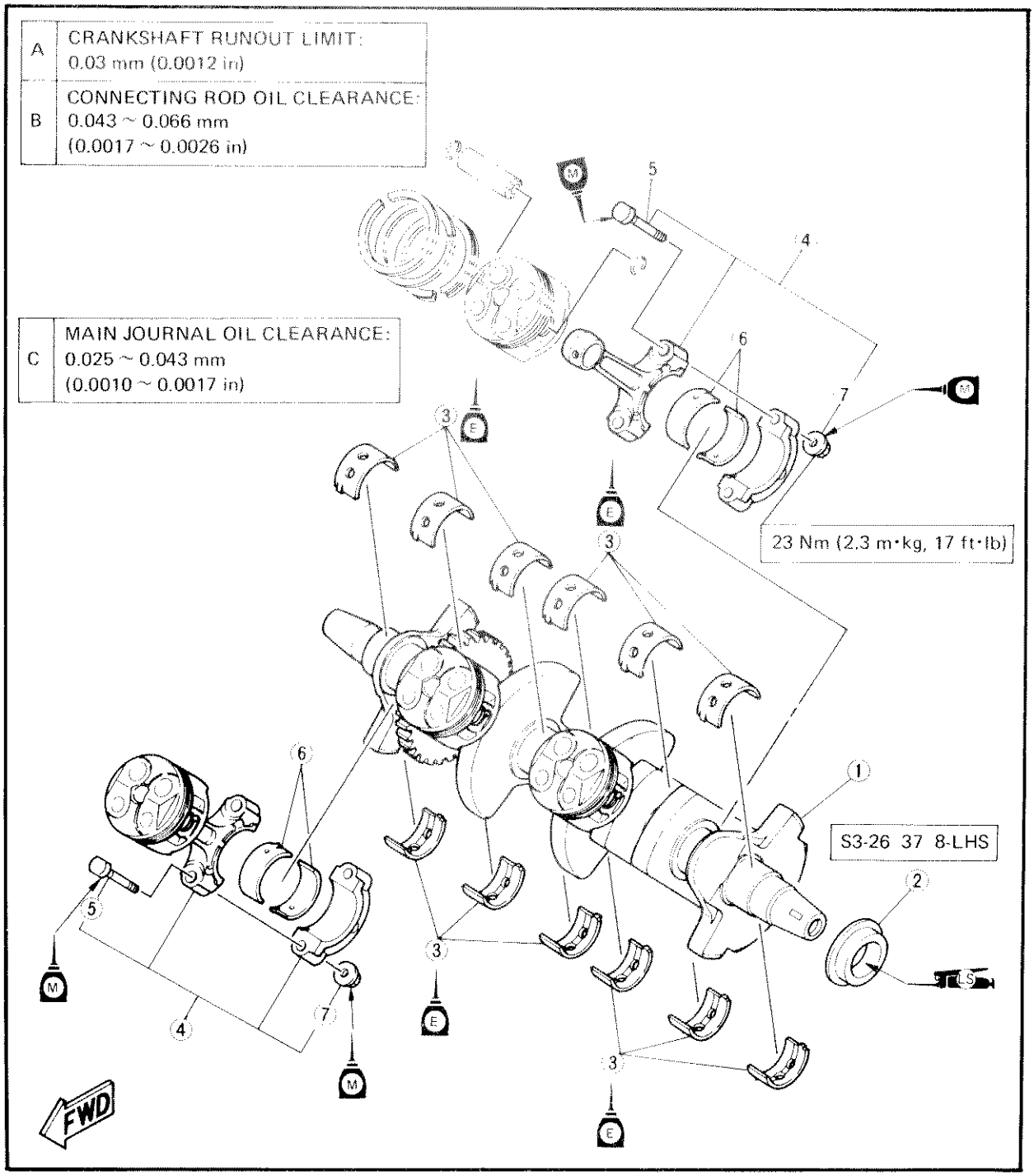
   From the combustion chamber.
   Use a rounded scraper.

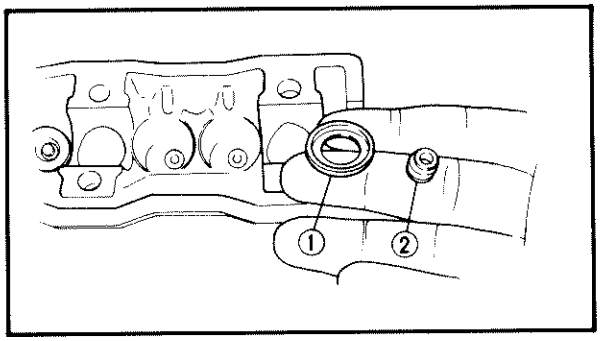
NOTE:

Do not use a sharp instrument and avoid damaging or scratching:
- Spark plug threads
- Valve seat
- Cylinder head

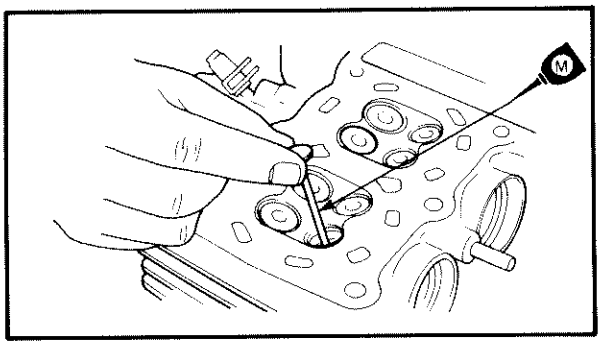
CRANKSHAFT

① Crankshaft
② Oil seal
③ Main journal bearing
④ Connecting rod assembly
⑤ Connecting rod bolt
⑥ Connecting rod bearing
⑦ Nut



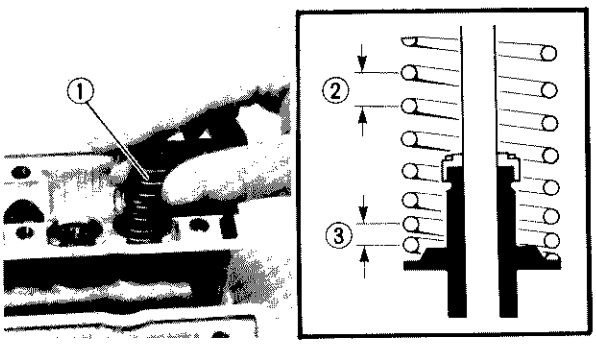


2. Install:
   - Valve retainer ①
   - Oil seal ②



3. Install:
   - Valve

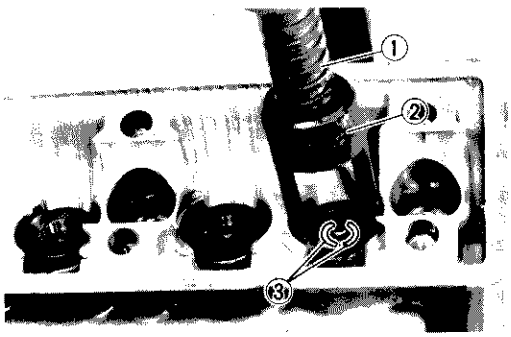
NOTE:
Apply molybdenum disulfide oil.



4. Install:
   - Valve spring ①

NOTE:
Install springs with wider-gapped coils facing upwards, as shown.

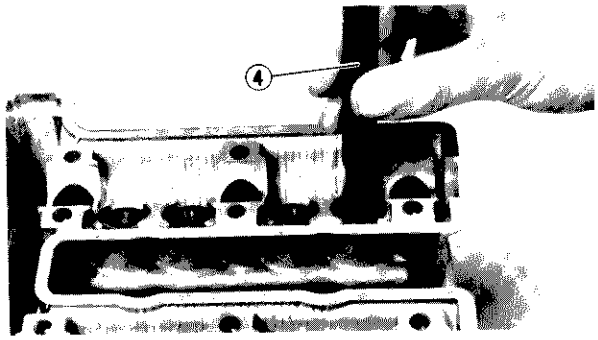
② Larger pitch
③ Smaller pitch



5. Attach:
   - Valve spring compressor ①
   - Attachment ②

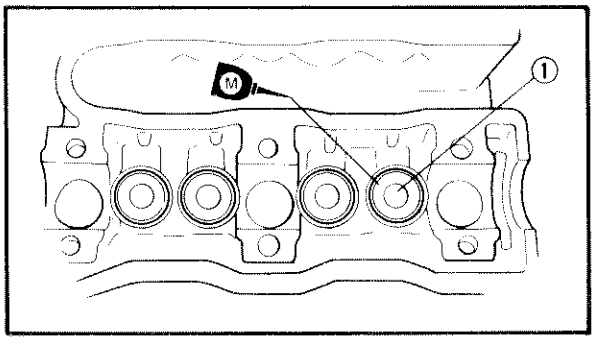
Valve spring compressor:
YM-04019
90890-04019

Attachment:
YM-04108
90890-04108



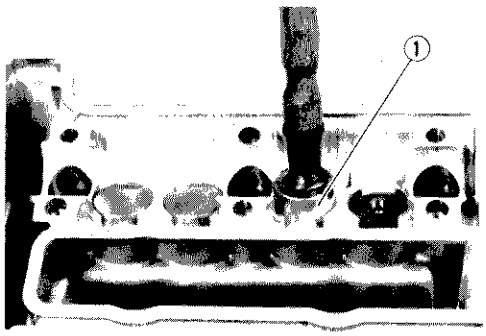
6. Install:
   - Valve cotters ③
7. Settle the valve cotter by lightly patting the valve seat with a piece of wood ④ in between.

NOTE:
Do not hit so much as to damage the valve.

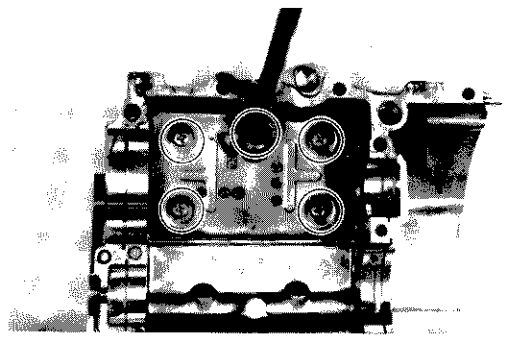


8. Install:
   - Valve pads ①

NOTE:
Apply molybdnum disulfide oil.



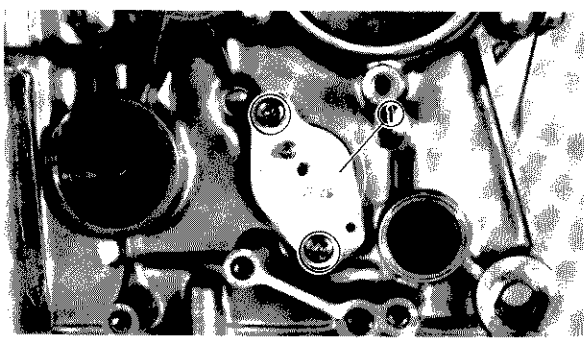
9. Install:
   - Lifters ①



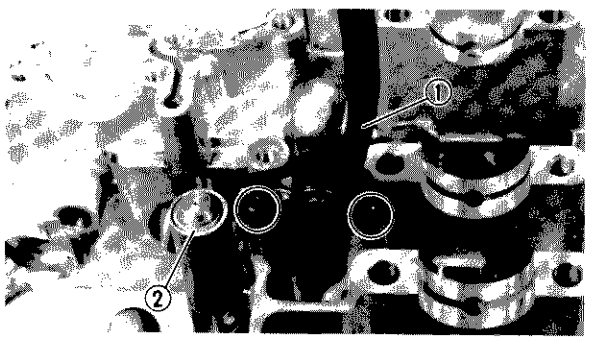
CRANKSHAFT

1. Install:
   - Oil baffle plate
   - Breather hose

	Oil baffle plate bolts: **7 Nm (0.7 m · kg, 5.1 ft · lb)**



2. Install:
   - Neutral switch assembly ①



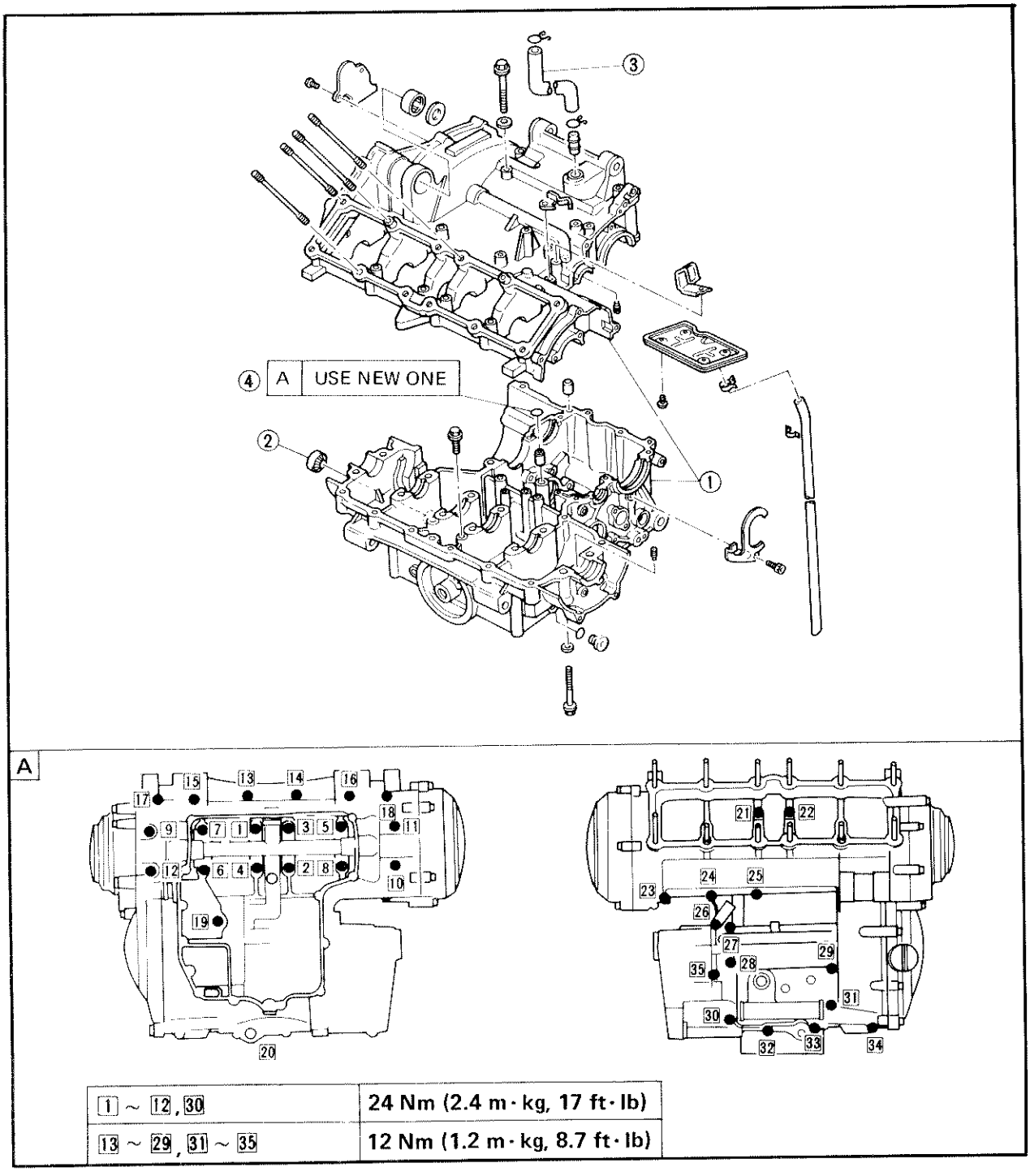
3. Install:
   - Timing chain guide (intake side) ①
   - O-ring ②

	Bolts (chain guide): **10 Nm (1.0 m · kg, 7.2 ft · lb)**

CRANKCASE

① Crankcase assembly
② Oil level window
③ Crankcase ventilation hose
④ O-ring

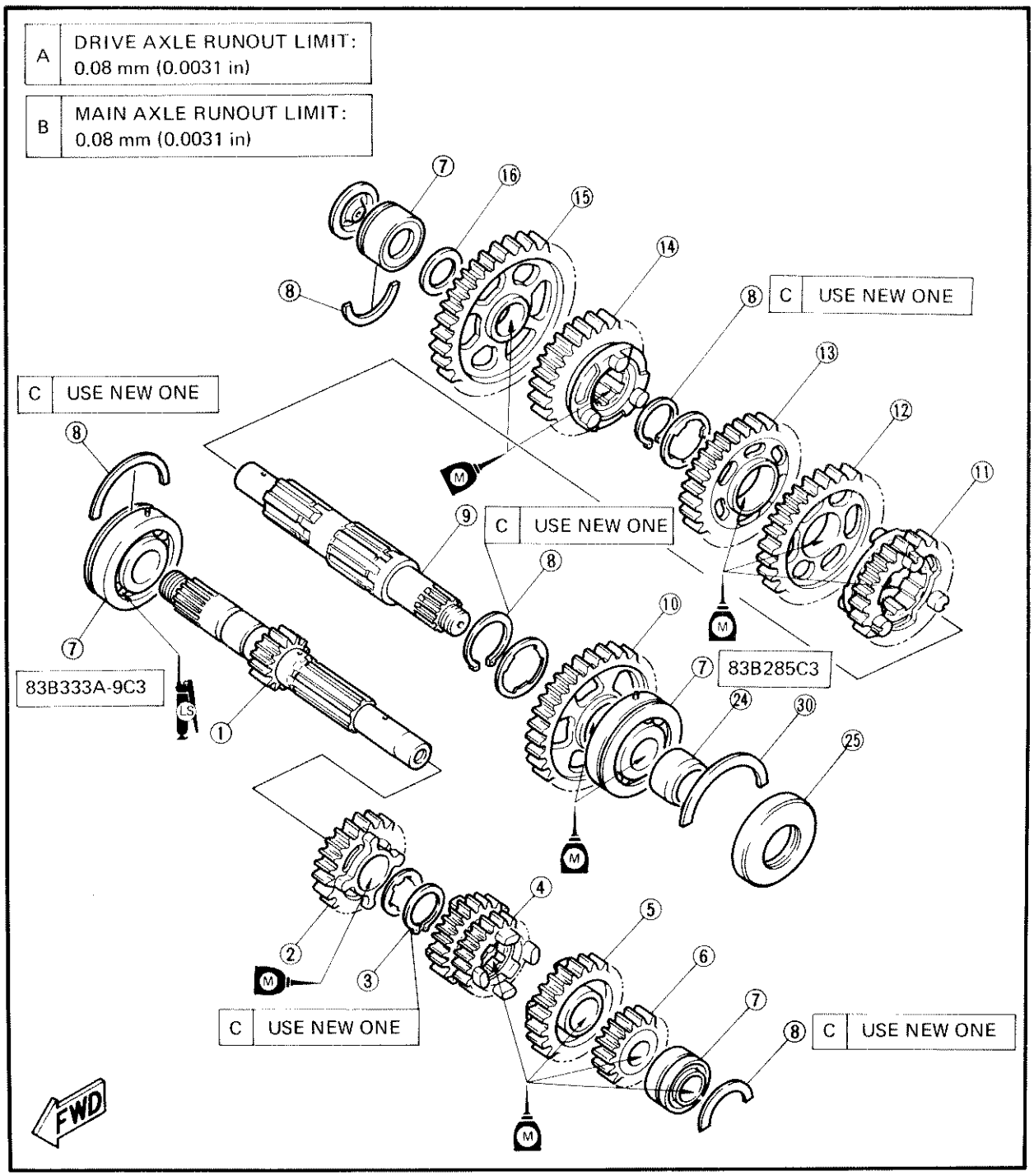
Ⓐ Crankcase sequence tightening

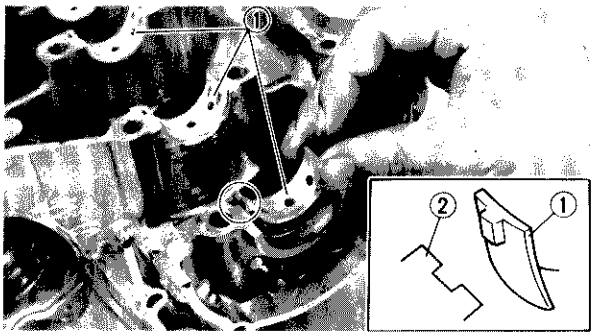


1 ~ 12, 30	24 Nm (2.4 m · kg, 17 ft · lb)
13 ~ 29, 31 ~ 35	12 Nm (1.2 m · kg, 8.7 ft · lb)

TRANSMISSION

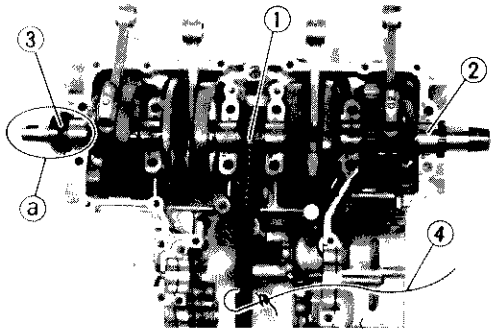
① Main axle
② 5th pinion gear
③ Circlip
④ 3rd pinion gear
⑤ 6th pinion gear
⑥ 2nd pinion gear
⑦ Bearing
⑧ Circlip
⑨ Drive axle
⑩ 2nd wheel gear
⑪ 6th wheel gear
⑫ 3rd wheel gear
⑬ 4th wheel gear
⑭ 5th wheel gear
⑮ 1st wheel gear
⑯ Washer
⑰ Special washer





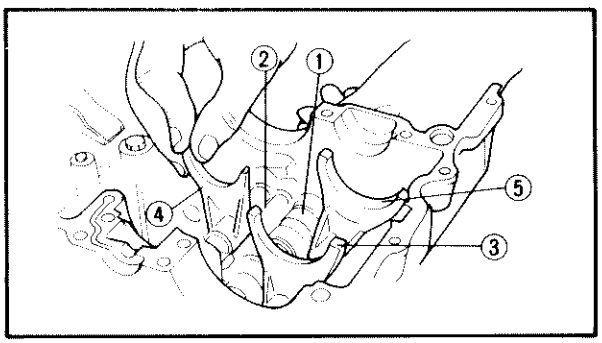
4. Install:
   - Main journal bearing ①
     (to crankcase (lower) ②)

NOTE:
- Apply engine oil.
- Identify each bearing position very carefully so that it can be reinstalled in its original place.



5. Install:
   - Timing chain ①
     (onto the crankshaft)
   - Crankshaft assembly ②

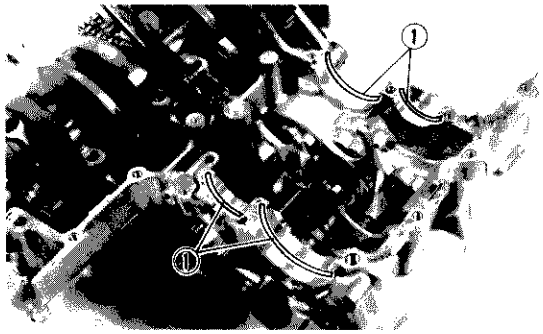
NOTE:
- The stepped crankshaft end ⓐ should face to the left.
- Pass the timing chain through the timing chain cavity. Be sure to attach a retaining wire ④ to the timing chain.



TRANSMISSION, SHIFTER AND SHIFT CAM

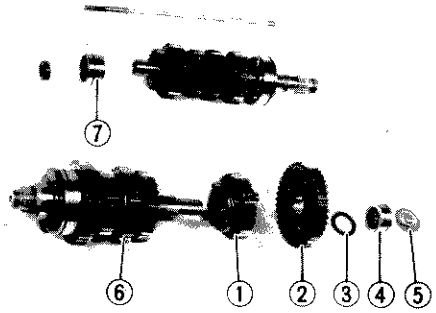
1. Install:
   - Shift cam assembly ①
   - Guide bars ②
   - Shift fork #1 ③
   - Shift fork #2 ④
   - Shift fork #3 ⑤

NOTE:
All shift fork letters should face to the left side and be in sequence (1, 2, 3) beginning from the left.

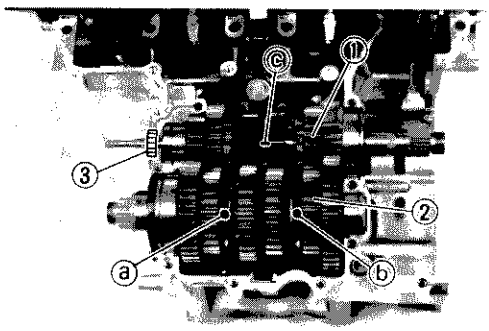


2. Install:
   - Circlip (new) ①
     (to crankcase (lower))

NOTE:
Be sure the circlips ① are inserted into the lower crankcase positioning grooves.

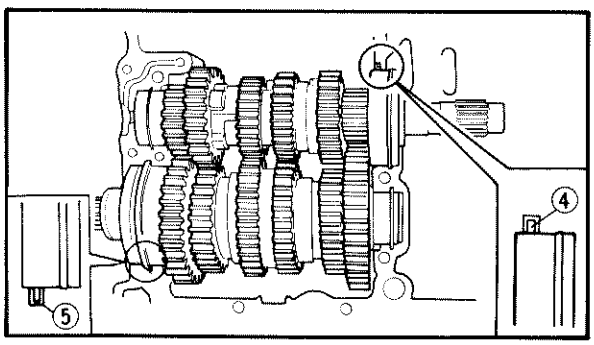


3. Install:
   - 4th wheel gear ①
   - 1st wheel gear ②
   - Washer ③
   - Bearing ④
   - Special washer ⑤
     (to drive axle ⑥)



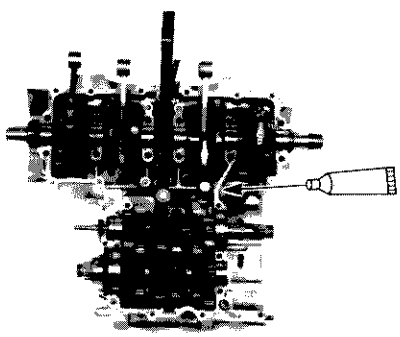
4. Install:
   - Main axle assembly ①
   - Drive axle assembly ②
   - Oil seal (push rod) ③

NOTE:
- Be sure the manufacture mark on oil seal (push rod) face outward.
- Be sure the main axle bearing pin ④ should face to front and the drive axle bearing pins ⑤ should face to rear.
- Be sure the circlips are inserted into the bearings positioning groove.
- Mesh the shift fork #1 with the 4th wheel gear ⓐ and #3 with the 5th wheel gear ⓑ on the drive axle.
- Mesh the shift fork #2 with the 3rd pinion gear ⓒ on the main axle.
- Carefully guide the shift forks so that they mesh smoothly with transmission gears.

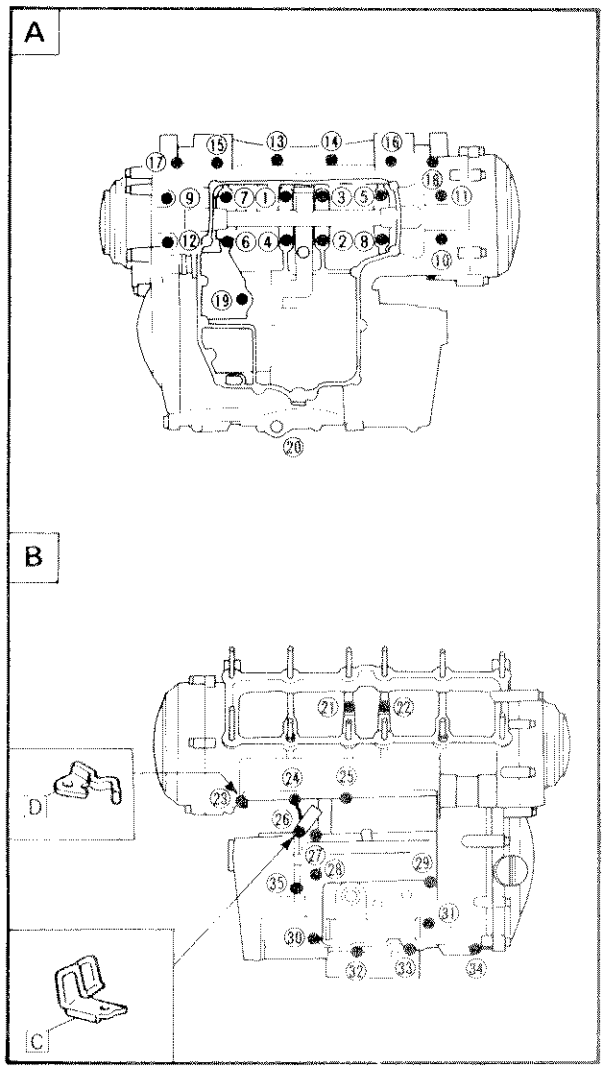


CRANKCASE ASSEMBLY

1. Apply:
   - Yamaha bond No. 1215 or Quick gasket® (to crankcase matching surfaces.)



Yamaha bond No. 1215:
P/N 90890-85505
Quick gasket® :
P/N ACC-11001-05-01



⚠ CAUTION:

Before tightening the crankcase bolts, check the following points:

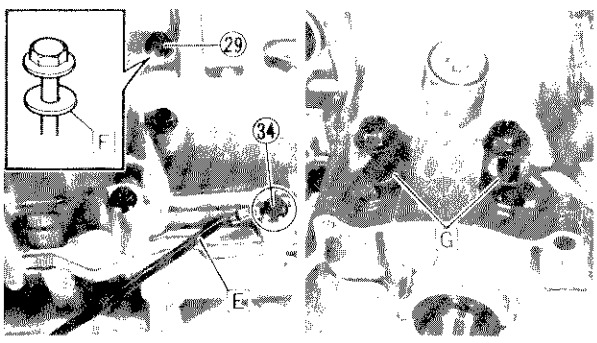
- **Be sure the gear shifts correctly while hand-turning the shift cam.**

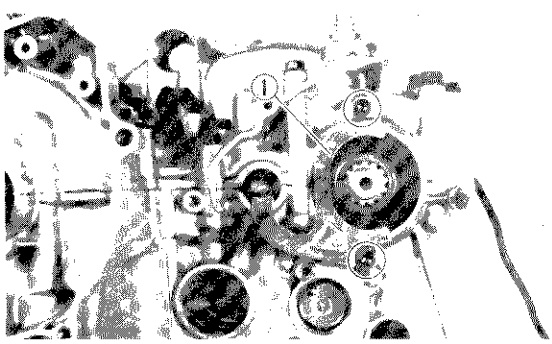
2. Tighten:
   - Lower crankcase bolt [A]
   - Upper crankcase bolt [B]
   - Clamp (big) [C]
   - Clamp (small) [D]

   (follow the proper tightening sequence.)

8 mm bolt ① ~ ⑫ ㉚ :
24 Nm (2.4 m · kg, 17 ft · lb)
6 mm bolt ⑬ ~ ㉙ ㉛ ~ ㉟ :
12 Nm (1.2 m · kg, 8.7 ft · lb)

NOTE:
- Install the ground lead [E] on bolt No. ㉞.
- Install the copper washer [F] on bolt No. ㉙.
- Install the washer [G] on bolt No. ① ~ ⑫.



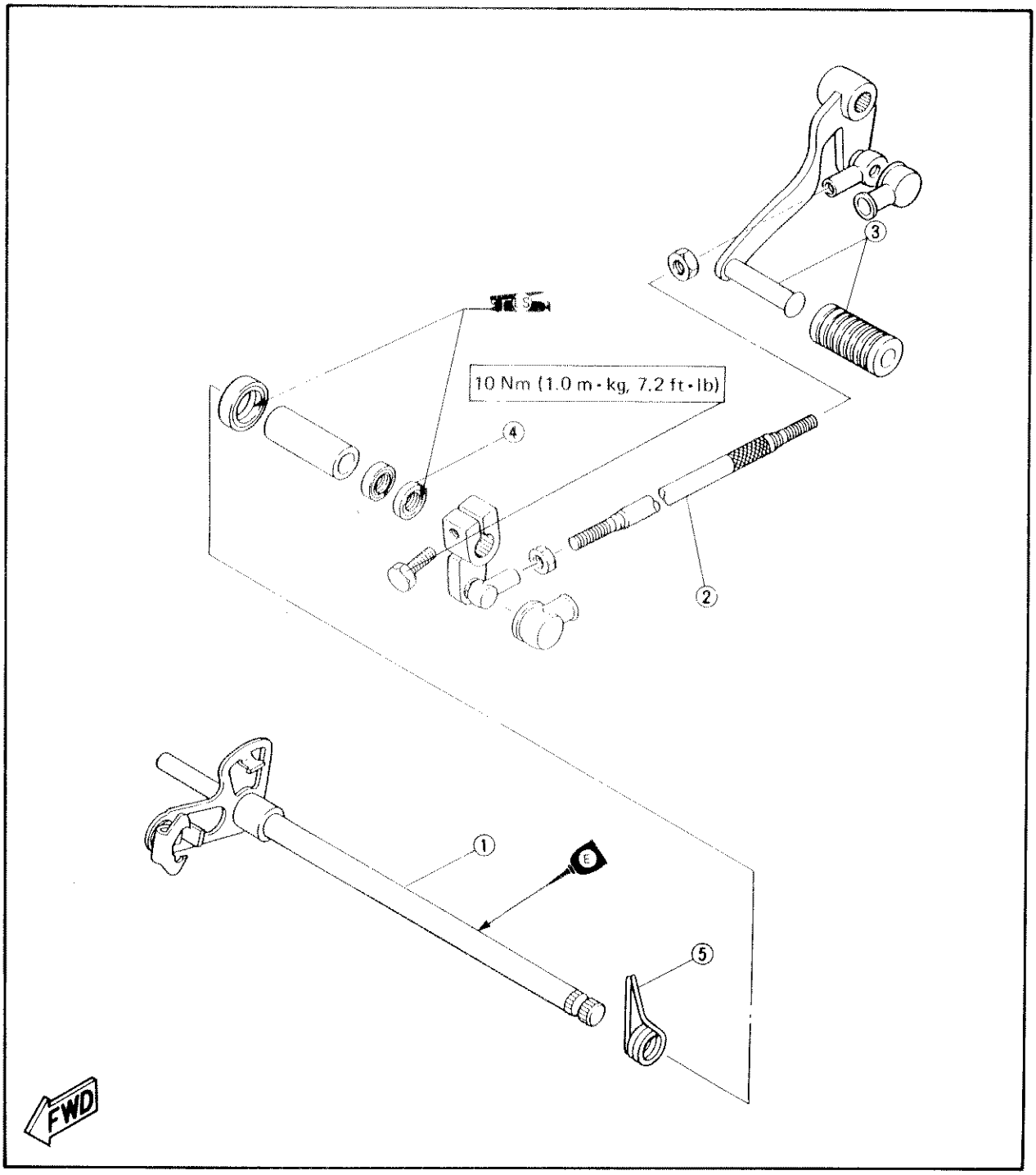


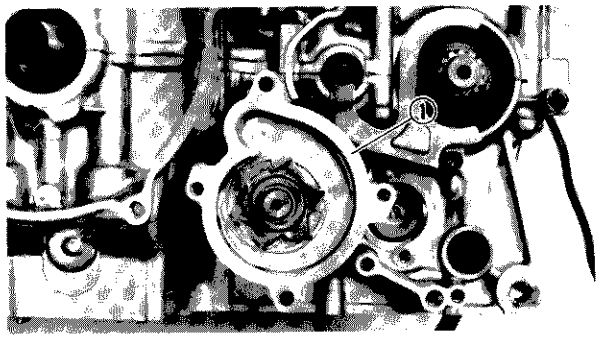
3. Install:
   - Oil seal stopper ①

Bolts (oil seal stopper):
10 Nm (1.0 m · kg, 7.2 ft · lb)

SHIFT SHAFT

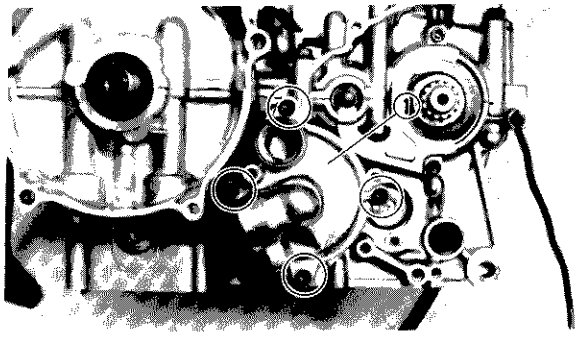
① Shift shaft
② Change link shaft
③ Change pedal
④ Oil seal
⑤ Spring





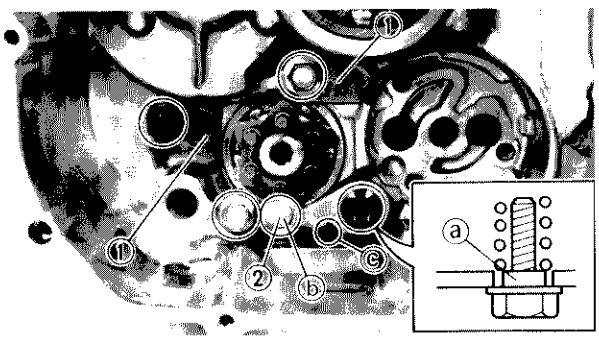
WATER PUMP

1. Install:
   - Water pump housing ①



2. Install:
   - O-ring (new)
   - Water pump cover ①

	Bolts (water pump cover): **10 Nm (1.0 m · kg, 7.2 ft · lb)**



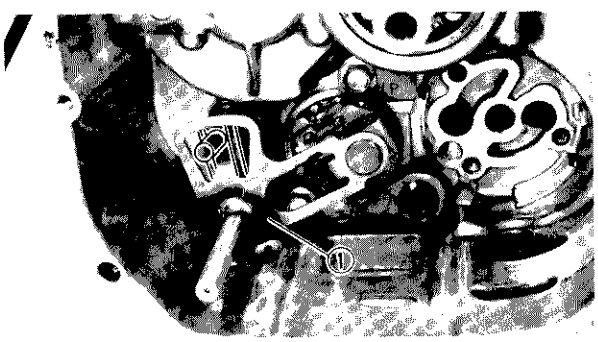
SHIFT SHAFT AND OIL PUMP

1. Install:
   - Stopper plate (shift cam) ①
   - Stopper lever ②

	Bolts (stopper plate): **10 Nm (1.0 m · kg, 7.2 ft · lb)** **Use LOCTITE ®** **Bolt (stopper lever):** **10 Nm (1.0 m · kg, 7.2 ft · lb)** **Use LOCTITE ®**

NOTE:

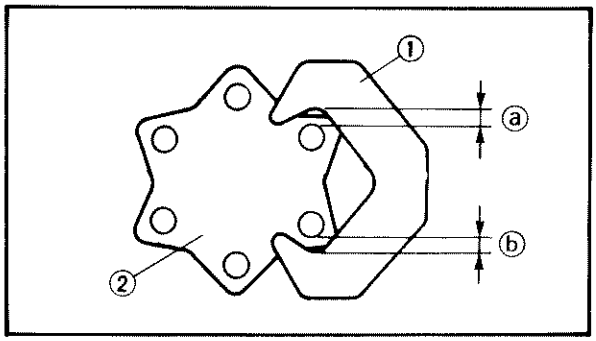
- Install the boss ⓐ of the bolt (stopper lever) into the stopper lever hole correctly.
- Mesh the stopper lever roller ⓑ with the shift cam stopper.
- Hook the spring ends on the stopper lever and crankcase boss ⓒ .



2. Install:
   - Shift shaft assembly ①

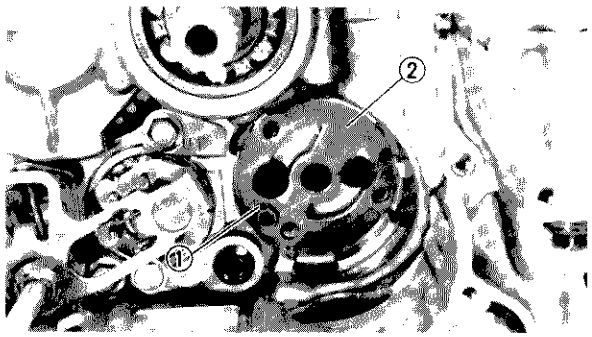
NOTE:

- Insert the stopper between spring ends.
- Apply the grease to the oil seal lip.

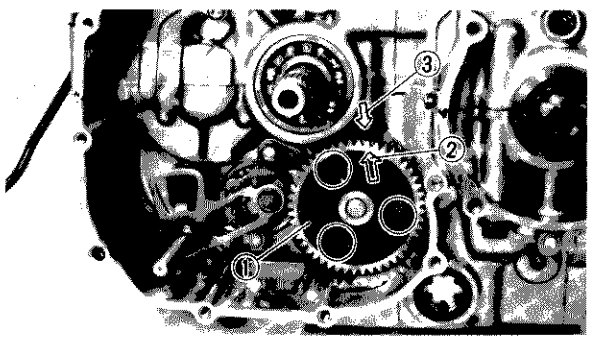


3. Check:
   - Shift pawl ① position
     Gaps ⓐ and ⓑ are not equal → Replace the defective parts or adjust the adjuster.

② Shift cam



4. Install:
   - Dowel pin ①
   - Gasket (new) ②



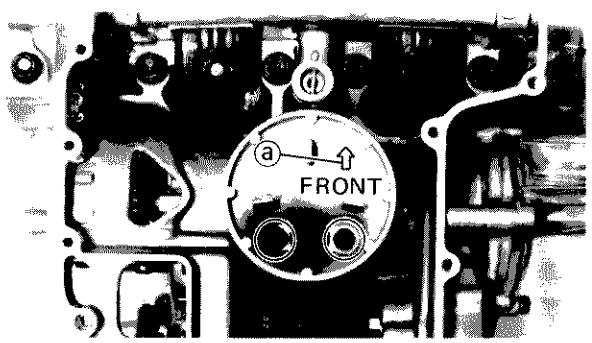
5. Install:
   - Oil pump assembly ①

Oil pump mounting bolts:
10 Nm (1.0 m · kg, 7.2 ft · lb)
Use LOCTITE®

NOTE:
Align the oil pump arrow mark ② with crankcase arrow mark ③.

OIL PAN AND OIL STRAINER

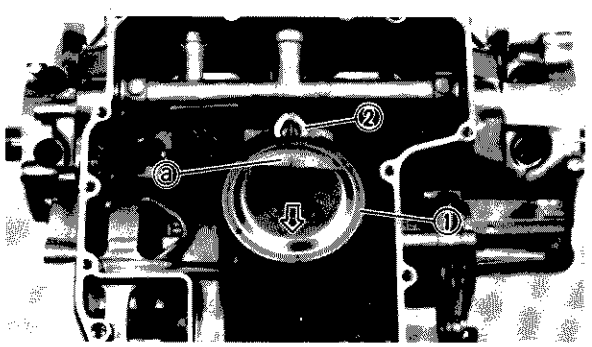
1. Install:
   - Oil strainer assembly



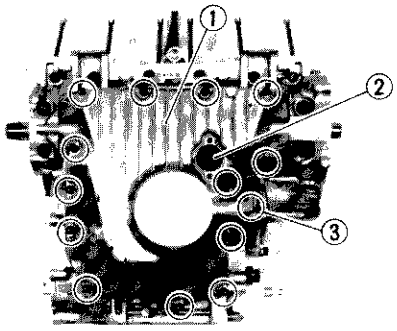
Bolts (oil strainer assembly):
10 Nm (1.0 m · kg, 7.2 ft · lb)

NOTE:
Install the oil strainer assembly so that the arrow mark ⓐ face forward.

2. Install:
   - Oil strainer cover ①
   - Relief valve ②

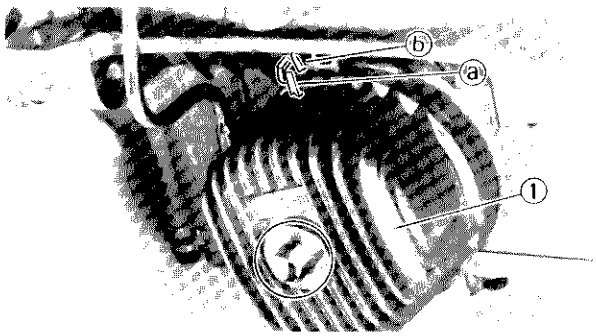


NOTE:
The element (window) ⓐ must be installed vertically against housing arrow mark.



3. Install:
   - Dowel pins
   - Gasket (new)
   - Oil pan ①
   - Oil level switch ②
   - Drain plug ③
   - Clamp

Bolts (oil pan):
10 Nm (1.0 m · kg, 7.2 ft · lb)



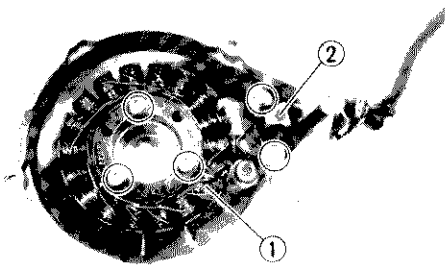
4. Install:
   - Oil filter assembly ①

Bolt (oil filter):
15 Nm (1.5 m · kg, 11 ft · lb)

NOTE:
Align the projection ⓐ on the oil filter assembly with the slots ⓑ on the crankcase.

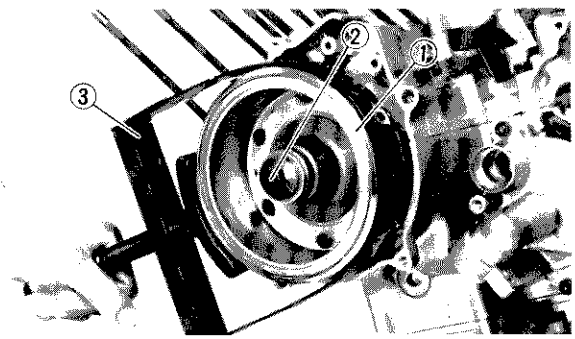
A Rubber

A.C. MAGNETO AND STARTOR MOTOR



1. Install:
   - Stator coil assembly ①
   - Pickup coil ②

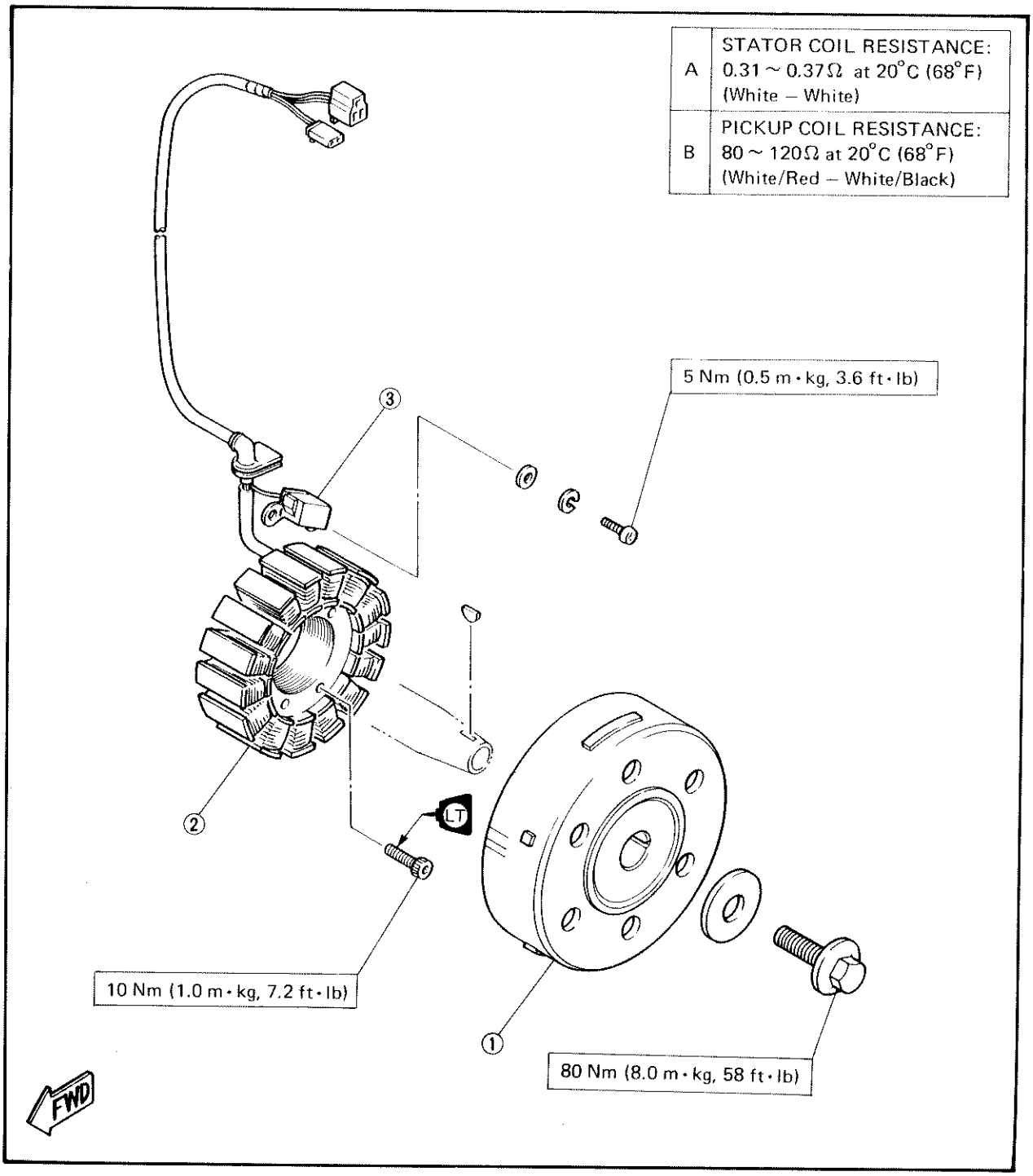
Bolts (stator coil assembly):
10 Nm (1.0 m · kg, 7.2 ft · lb)
Use LOCTITE®
Screws (pickup coil):
5 Nm (0.5 m · kg, 3.6 ft · lb)



2. Install:
   - Woodruff key
   - Magneto ①
   - Bolt (magneto) ②
3. Attach:
   - Rotor holding tool ③

A.C. GENERATOR

① Magneto
② Stator coil assembly
③ Pickup coil



NOTE:
- Clean the tapered portions of the crankshaft and magneto.
- When installing the magneto, make sure the woodruff key is properly seated in the key way of the crankshaft.

Rotor holding tool:
YS-01880,
90890-01701

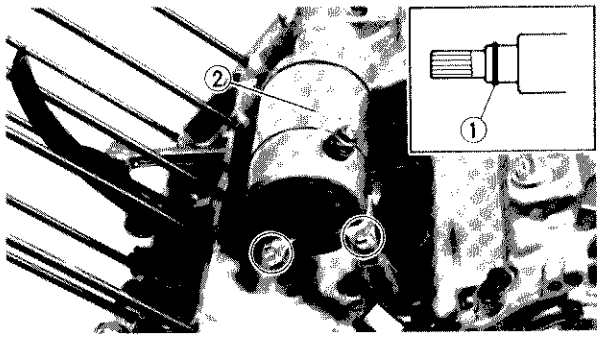
4. Tighten:
   - Bolt (magneto)

NOTE:
Tighten the bolt (magneto) while holding the magneto with the universal rotor holder.

Bolt (magneto):
80 Nm (8.0 m · kg, 58 ft · lb)

5. Check:
   - O-ring (starter motor) ①
     Damage → Replace.
6. Install:
   - Starter motor ②

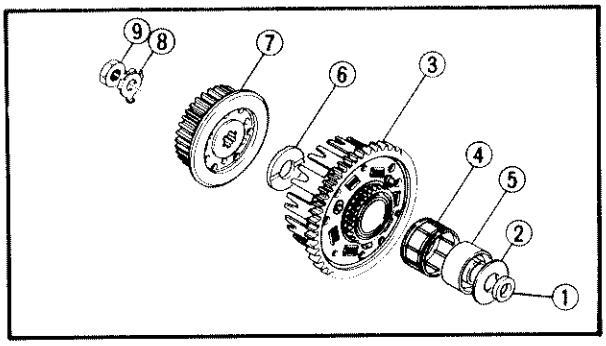
NOTE:
Apply the lithium soap base grease onto the O-ring.



Bolt (starter motor):
10 Nm (1.0 m · kg, 7.2 ft · lb)

CLUTCH

1. Install:
   - Collar ①
   - Thrust washer ②
   - Clutch housing ③
   - Bearing ④
   - Spacer ⑤
   - Thrust washer ⑥
   - Clutch boss ⑦
   - Lock washer (new) ⑧
   - Nut (clutch boss) ⑨



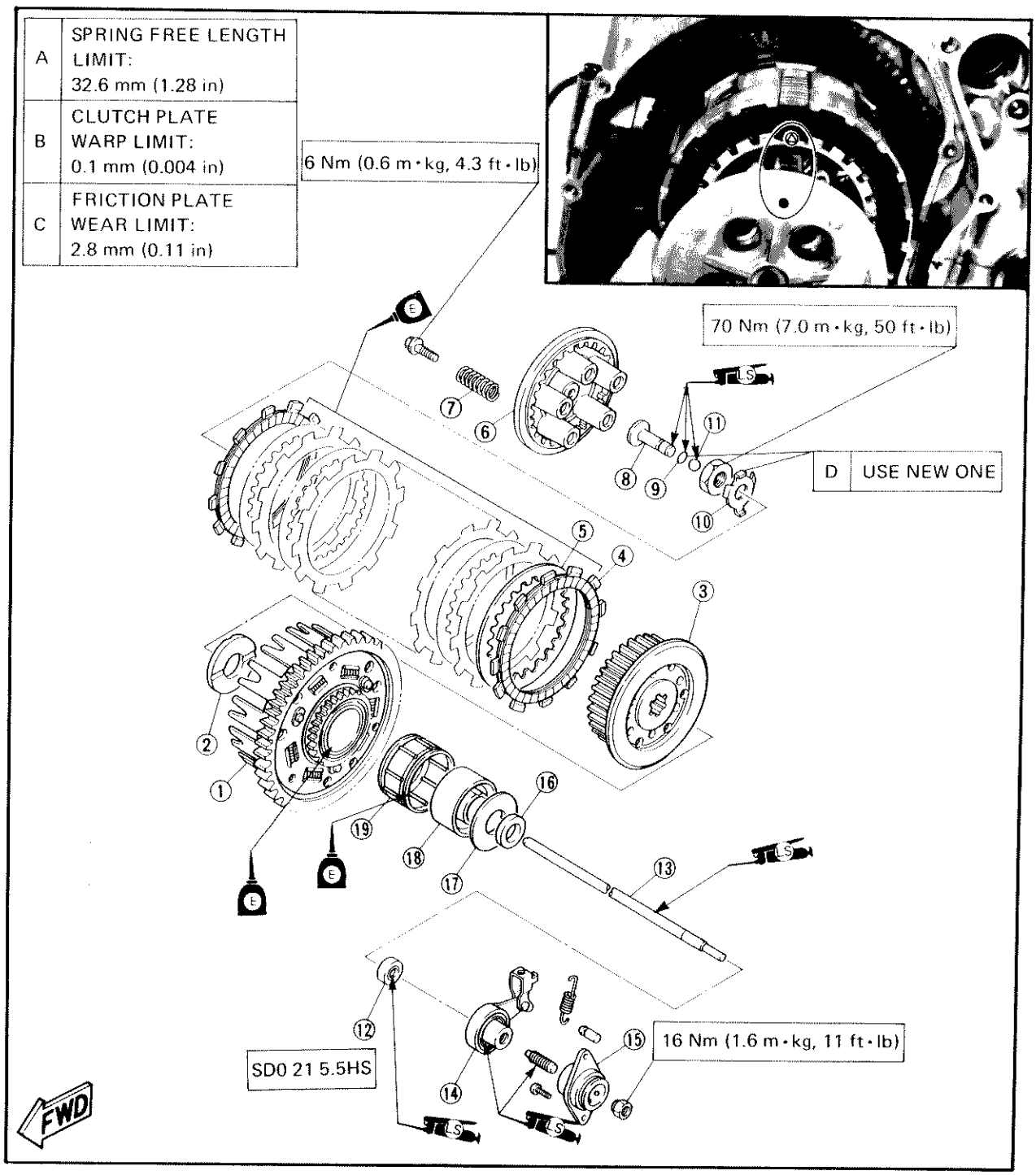
NOTE:
Install the bearing ④ and spacer ⑤ after installation of the clutch housing ③.

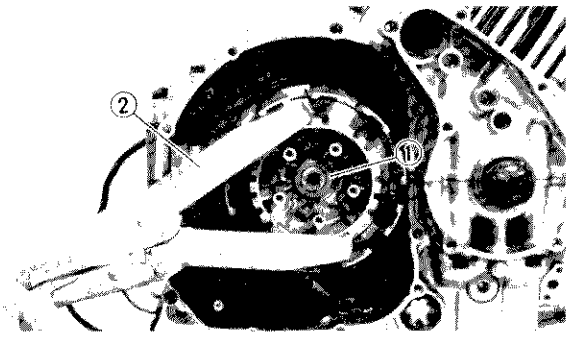
⚠ WARNING:
Always use a new lock washer.

CLUTCH

① Primary driven gear
② Thrust washer
③ Clutch boss
④ Friction plate
⑤ Clutch plate
⑥ Pressure plate
⑦ Clutch spring
⑧ Push rod #1
⑨ O-ring
⑩ Lock washer
⑪ Bolt
⑫ Oil seal
⑬ Push rod #2
⑭ Push lever assembly
⑮ Boll screw housing
⑯ Collar
⑰ Thrust washer
⑱ Spacer
⑲ Bearing

A	SPRING FREE LENGTH LIMIT: 32.6 mm (1.28 in)
B	CLUTCH PLATE WARP LIMIT: 0.1 mm (0.004 in)
C	FRICTION PLATE WEAR LIMIT: 2.8 mm (0.11 in)





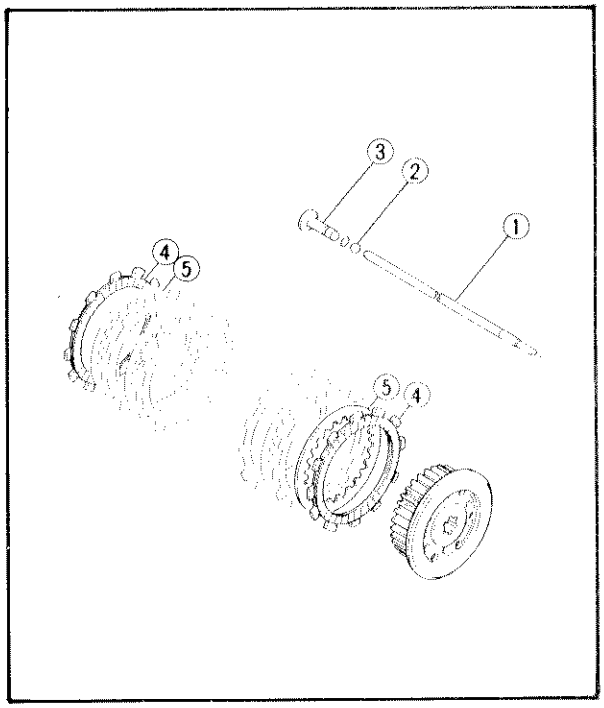
2. Tighten:
   - Nut (clutch boss) ①
     Use the Universal Clutch Holder ②.

NOTE:
Tighten the nut ① (clutch boss) while holding the clutch boss with the universal clutch holder ②.

Universal clutch holder:
YM-91042
90890-04086

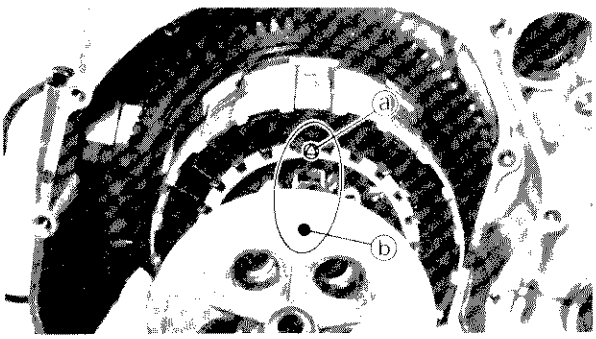
Nut (clutch boss):
70 Nm (7.0 m · kg, 50 ft · lb)

3. Bend the lock washer tab along the nut flat.



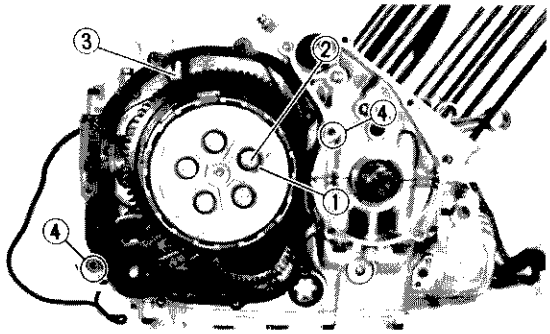
4. Install:
   - Push rod #2 ①
   - Boll ②
   - Push rod #1 ③
   - Friction plates ④
   - Clutch plates ⑤

NOTE:
Apply the transmission oil onto the friction plate ③.
Apply the lithium soap base grease onto the push rod #1, #2, O-ring and ball.
Install the clutch plates and friction plate alternately on the clutch boss, starting with a friction plate and ending with a friction plate.



5. Install:
   - Pressure plate

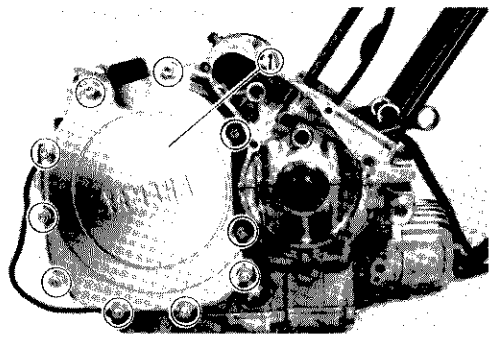
NOTE:
Be sure the match mark ⓐ on the clutch boss is aligned with the match mark ⓑ on the pressure plate.



6. Install:
   - Clutch springs ①
   - Bolts (clutch spring) ②
   - Gasket (new) ③
   - Dowel pins ④

	Bolts (clutch spring): **6 Nm (0.6 m · kg, 4.3 ft · lb)**

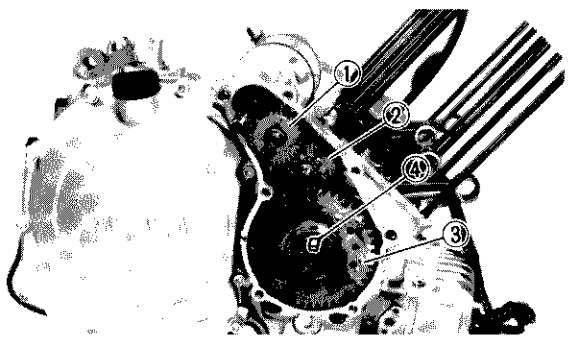
NOTE:
Tighten the bolts (clutch spring) in stage, using a crisscross pattern.



7. Install:
   - Dowel pins
   - Gasket (crankcase cover)
   - Crankcase cover (right) ①

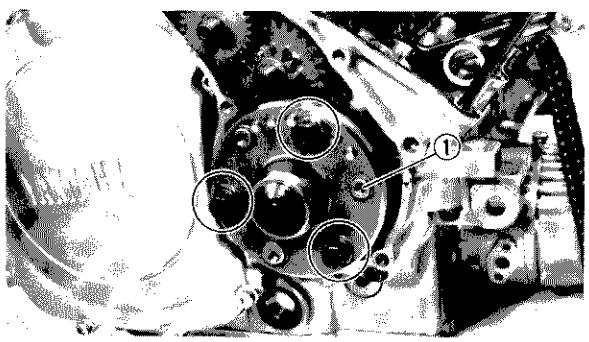
	Bolts (crankcase cover): **10 Nm (1.0 m · kg, 7.2 ft · lb)**

NOTE:
Tighten the bolts (crankcase cover) in stage, using a crisscross pattern.



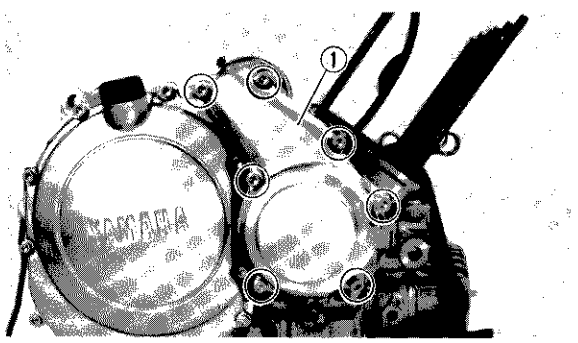
STARTER CLUTCH

1. Install:
   - Idle gear ①
   - Idle gear ②
   - Starter clutch gear ③
   - Woodruff key ④



2. Install:
   - Starter clutch ①
   - Washer
   - Bolts (starter clutch)

	Bolt (starter clutch): **80 Nm (8.0 m · kg, 58 ft · lb)**



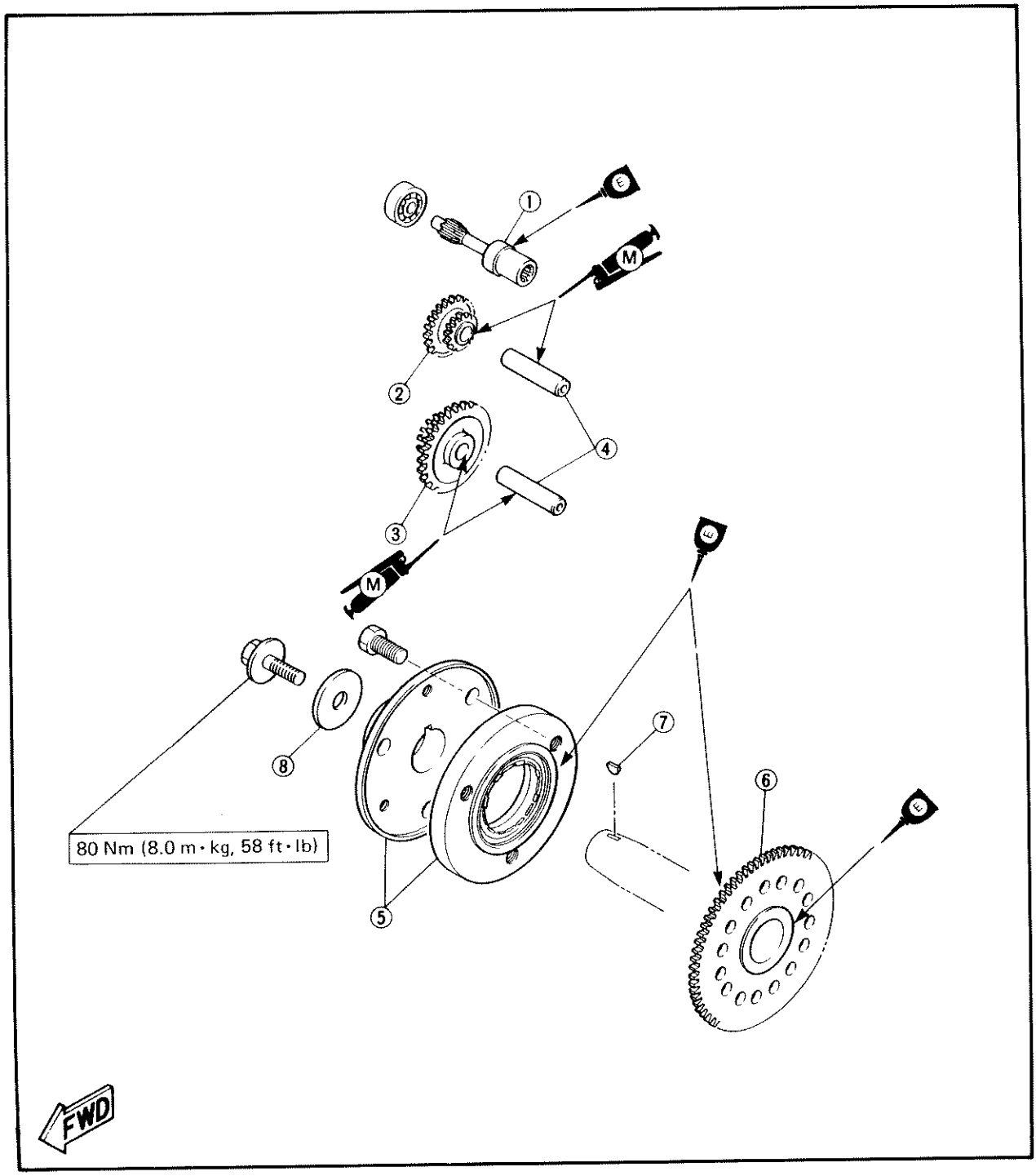
3. Install:
   - Dowel pins
   - Gasket (starter clutch cover) (new)
   - Starter clutch cover ①

	Bolts (starter clutch cover): **10 Nm (1.0 m · kg, 7.2 ft · lb)**

NOTE:
Tighten the bolts (starter clutch cover) in stage, using a crisscross pattern.

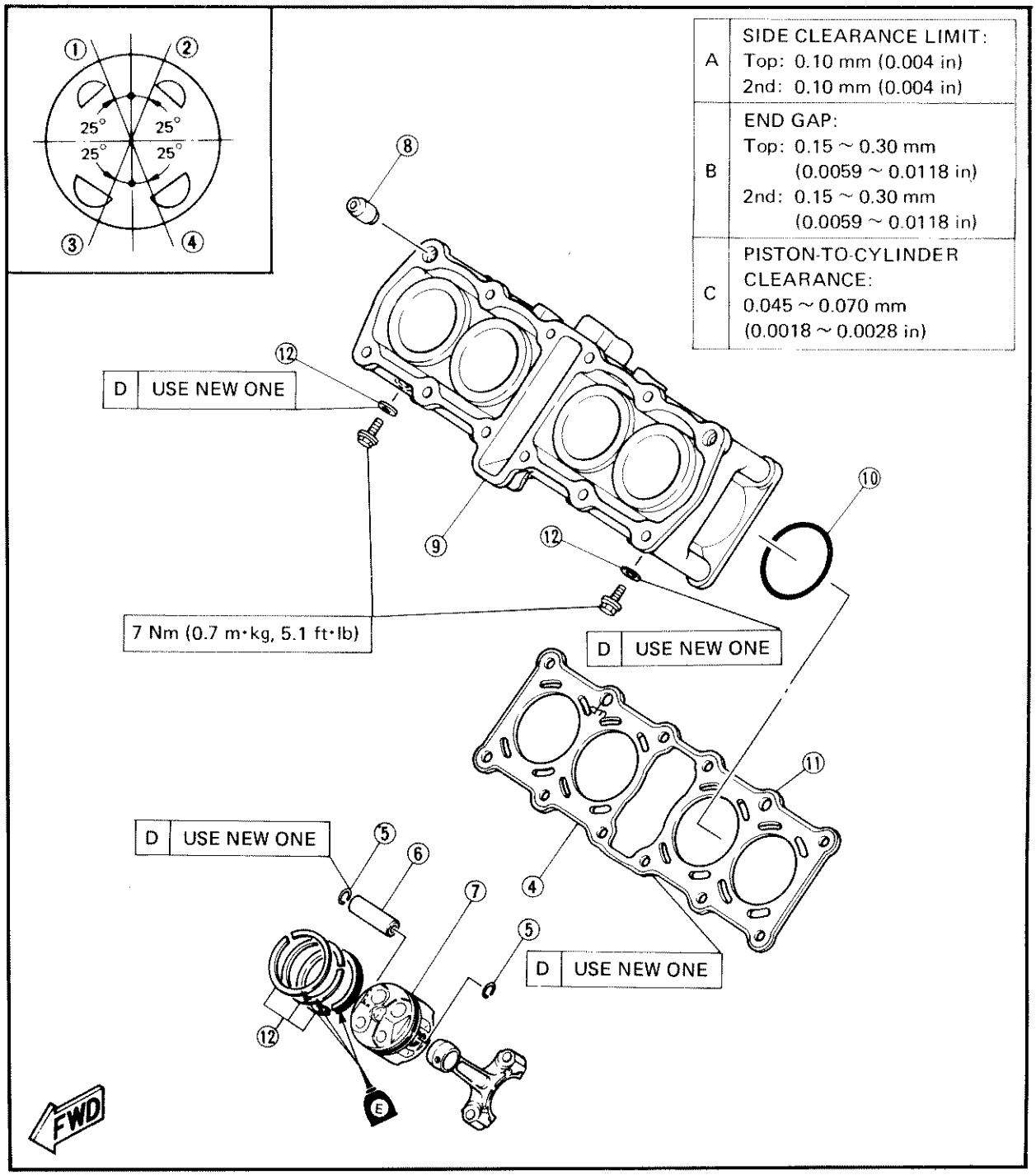
STARTER CLUTCH

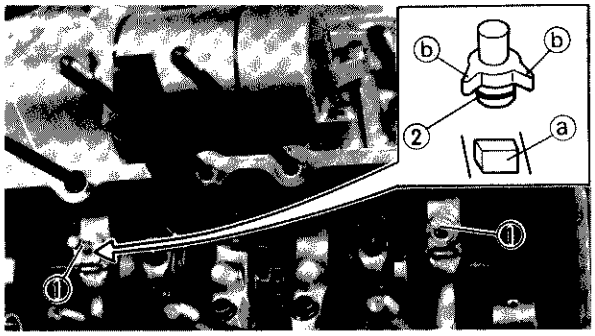
① Starter drive gear
② Idle gear
③ Idle gear
④ Shaft
⑤ Starter clutch assembly
⑥ Starter clutch gear
⑦ Woodruff key
⑧ Washer



PISTON AND CYLINDER

① Top ring
② Oil ring (Lower)
③ Oil ring (Upper)
④ Second ring
⑤ Circlip
⑥ Piston pin
⑦ Piston
⑧ Dowel pin
⑨ Cylinder
⑩ O-ring
⑪ Gasket (Cylinder)
⑫ Piston ring set

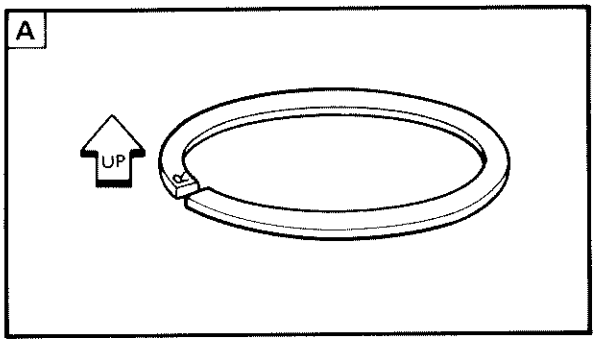




PISTON AND CYLINDER

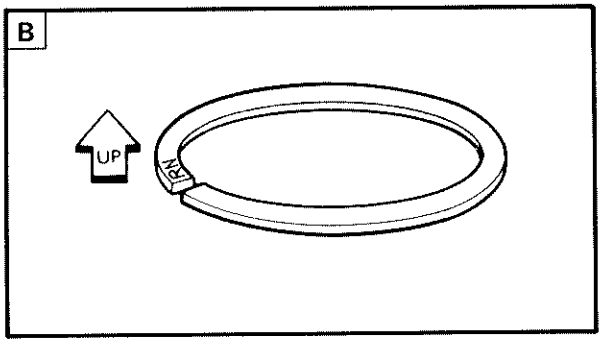
1. Install:
   - Oil jet nozzles ①
     (with O-ring ②)

NOTE:
Position the projection ⓐ on crankcase between arms ⓑ on the oil jet nozzle.

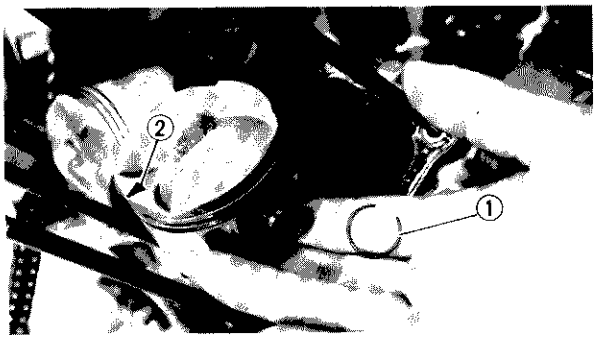


2. Install:
   - Piston rings

NOTE:
- Be sure to install rings to that manufacturer's marks or numbers are located on the top side of the rings. Oil the pistons and rings liberally.
- Piston ring with "R" mark should be installed into top ring position.
- Piston ring with "RN" mark should be installed into second ring position.

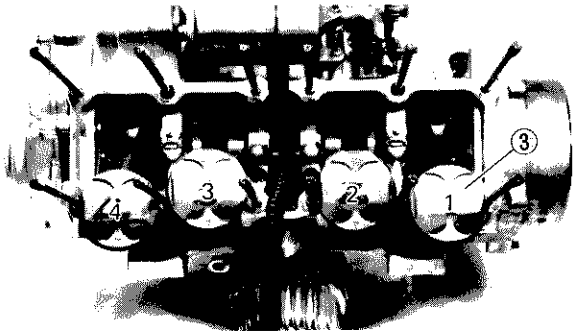


A Top ring
B Second ring

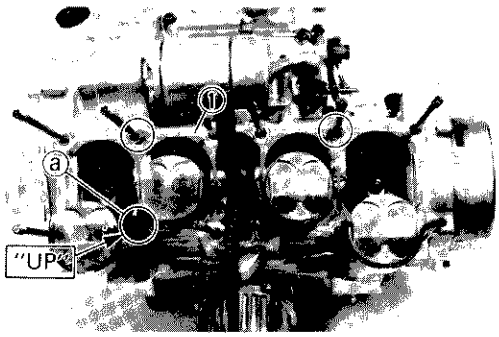


3. Install:
   - Piston pins
   - Pistons
   - Circlips (piston pin) ①

NOTE:
- Be sure the piston arrow mark ② face to exhaust side of the engine.
- Do not top the piston pin to install it.
- Before installing the piston pin circlip, cover the crankcase with a clean rag to prevent the circlip from falling into the crankcase cavity.
- Be sure the marked piston numbers ③ should be in sequence (1, 2, 3, 4) begining from the left.



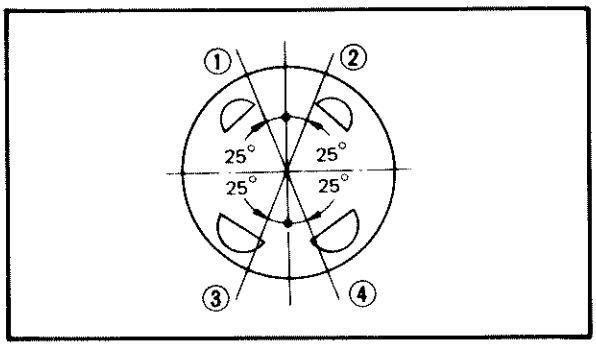
⚠ WARNING:
Always use a new circlips (piston pin).



4. Install:
   - Gasket (cylinder) (new) ①
   - Dowel pins

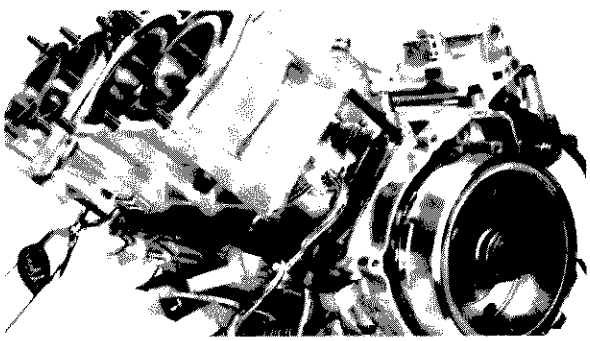
NOTE:
The gasket "UP" mark should be face upward.

⚠ WARNING:
Always use a new gasket.



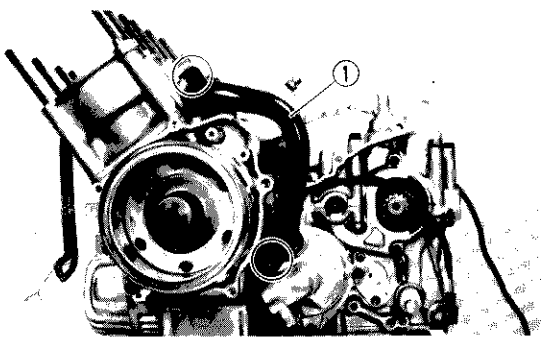
5. Lubricate:
   - Pistons
   - Piston rings
   - Cylinder

NOTE:
Apply a liberal coating of 4-stroke engine oil.



6. Position:
   Offset the piston ring end gaps.
   - Top ring end ①
   - Oil ring end (lower) ②
   - Oil ring end (upper) ③
   - 2nd ring end ④
7. Install:
   - Cylinder

NOTE:
- Install pistons #2 and #3 first.
- Pass the timing chain and timing chain guide (exhaust side) through the timing chain cavity.



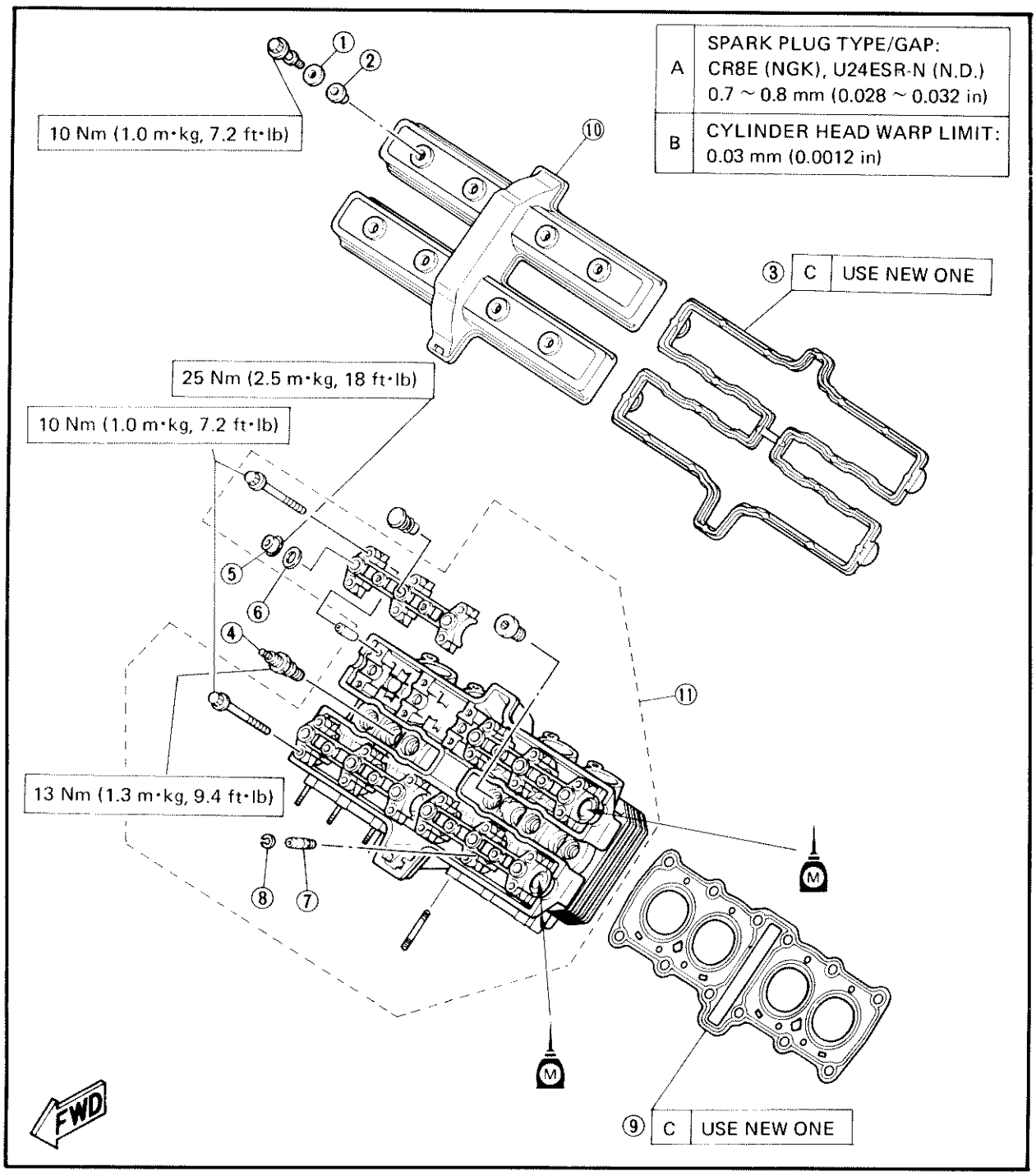
8. Install:
   - O-ring
   - Water pipe ①

	Bolts (water pipe): **10 Nm (1.0 m · kg, 7.2 ft · lb)**

CYLINDER HEAD AND CAMSHAFT

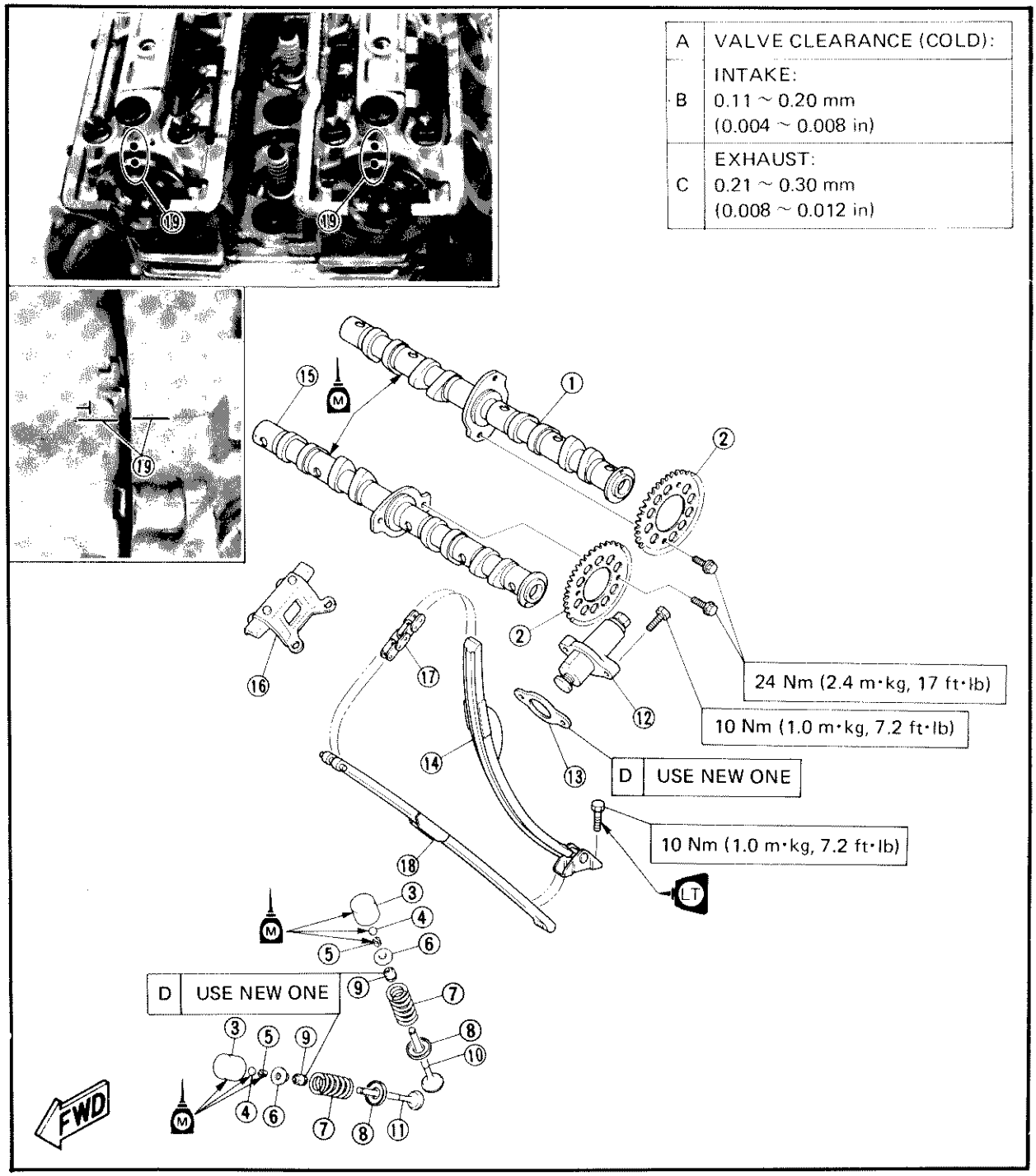
Cylinder Head

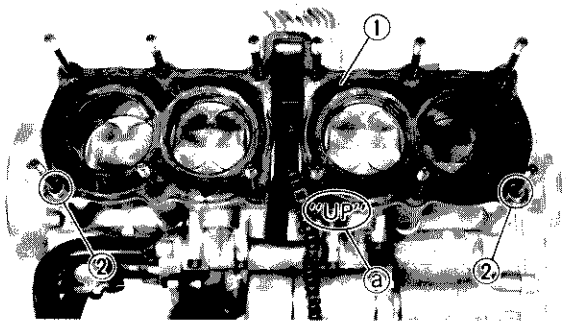
① Washer
② Rubber washer
③ Gasket (Cylinder head cover)
④ Spark plug
⑤ Nut
⑥ Washer
⑦ Valve guide
⑧ Circlip
⑨ Gasket (cylinder head)
⑩ Cylinder head cover
⑪ Cylinder head assembly



Camshaft

① Camshaft (intake)
② Timing chain sprocket
③ Valve lifter
④ Valve pad
⑤ Valve retainer
⑥ Spring seat
⑦ Valve spring
⑧ Spring seat
⑨ Oil seal
⑩ Intake valve
⑪ Exhaust valve
⑫ Timing chain tensioner
⑬ Gasket (timing chain tensioner)
⑭ Timing chain guide (intake side)
⑮ Camshaft (exhaust)
⑯ Chain guide (upper)
⑰ Timing chain
⑱ Timing chain guide (exhaust side)
⑲ Match mark





CYLINDER HEAD AND CAMSHAFT

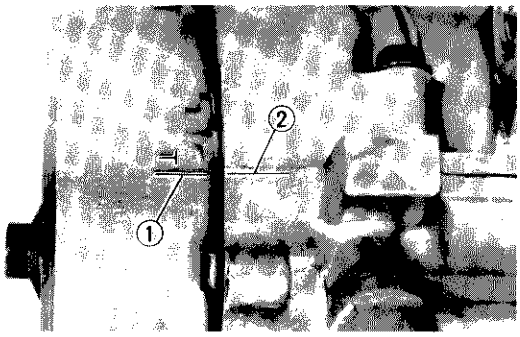
1. Install:
   - Gasket (cylinder head) (new) ①
   - Dowel pins ②

NOTE:
The gasket "UP" mark should face upward.

⚠ WARNING:
Always use a new gasket (cylinder head).

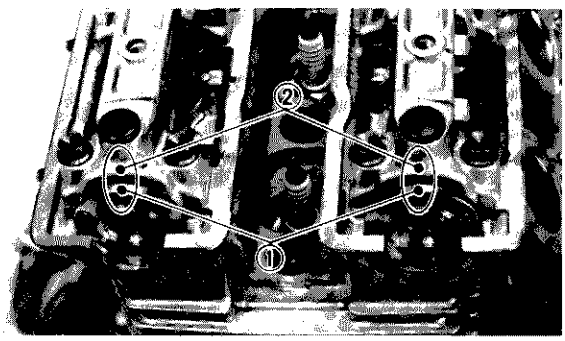
NOTE:
- Select either of the two procedures explained in this manual, as follows:
- Procedure 1.
  The timing chain is disconnected → Connect.
- Procedure 2.
  The camshafts are removed → Install.

2. Install:
   - Camshafts
   - Timing chain



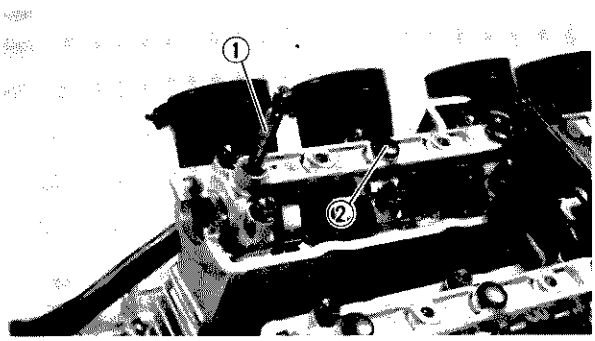
Procedure 1

1. Align:
   - "T" mark ①
     (with crankcase matching line ②)



2. Install:
   - Camshafts and cylinder head assembly

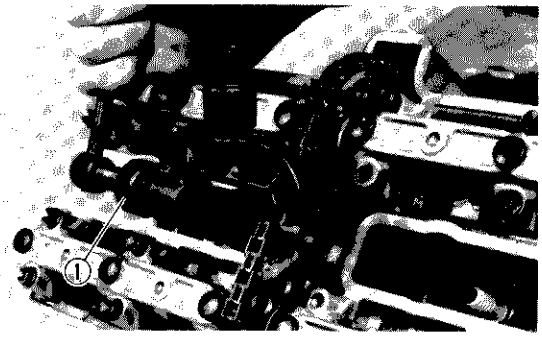
NOTE:
Be sure the camshaft timing marks ① align with the camshaft cap marks ② .



3. Install:
   - Nuts (cylinder head)
   - Caps ②
     Use the Hexagon Wrench 6 mm (0.24 in) ① .

NOTE:
Tighten the nuts in their proper tightening sequence and torque nuts in two stages.

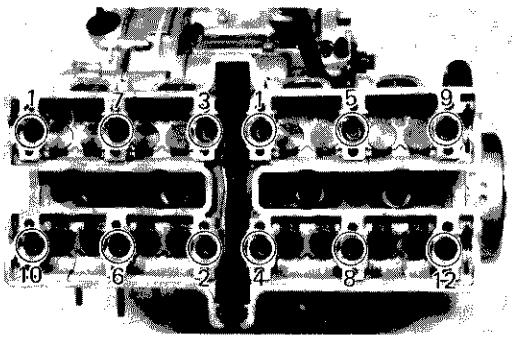
	Nuts (cylinder head): **25 Nm (2.5 m · kg, 18 ft · lb)**



4. Connect:
   - Timing chain
     With the chain joint (new).
     Use the timing chain cutter ① .

Timing chain cutter:
P/N YM-01112
90890-01112

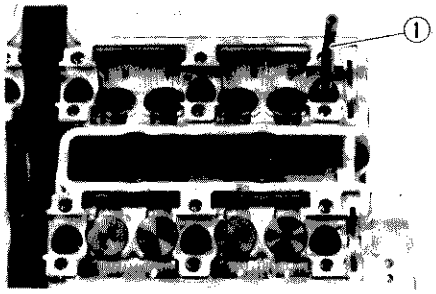
NOTE:
Keep the cam chain as tense as possible on the exhaust side.



5. Go to "TIMING CHAIN TENSIONER".

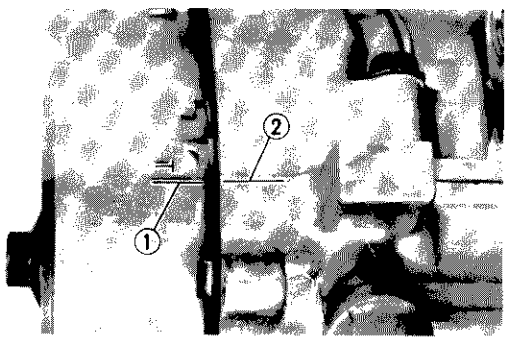
Procedure 2.

1. Install:
   - Cylinder head assembly
2. Tighten:
   - Nuts (cylinder head)
     Use the Hexagon wrench 6 mm (0.24 in) ① .

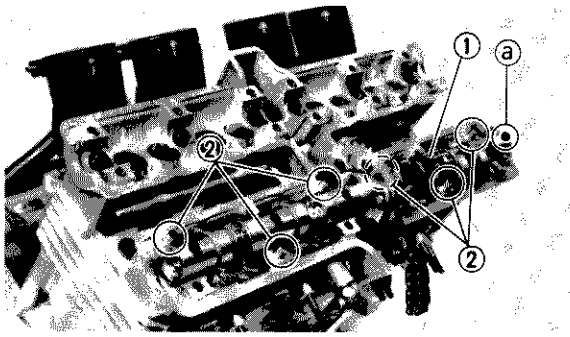


NOTE:
Tighten the nuts in their proper tightening sequence and torque nuts in two stages.

Nuts (cylinder head):
25 Nm (2.5 m · kg, 18 ft · lb)

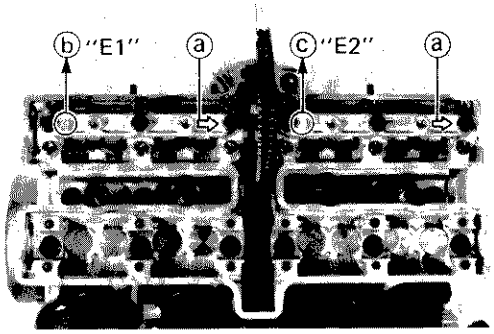


3. Align:
   - T-mark ①
     (with crankcase matching line ② .)



4. Install:
   - Camshaft (exhaust) ①
   - Dowel pins ②

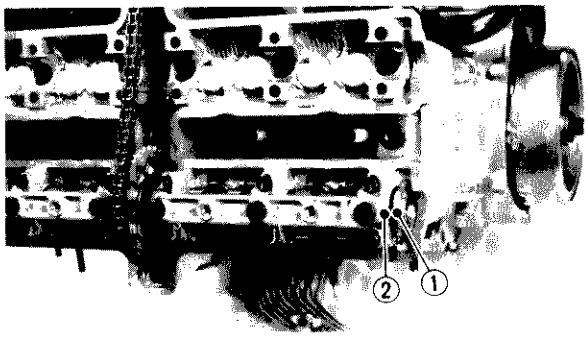
NOTE:
- Apply the molybdenum disulfide oil on the camshaft.
- Install the camshaft so that the punch mark ⓐ face upward.



3. Install:
   - Camshaft caps (exhaust)

NOTE:
- Face the arrow marks ⓐ on the camshaft caps to the clutch.
- The camshaft cap with the punched mark "E1" ⓑ should be installed on the rotor side and the "E2" ⓒ on the clutch side.
- Tighten the bolts (camshaft cap) in their proper tightening sequence and torque the bolts in two stages.

Bolt (camshaft cap):
10 Nm (1.0 m · kg, 7.2 ft · lb)

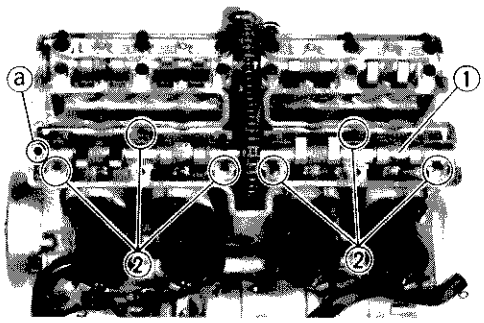


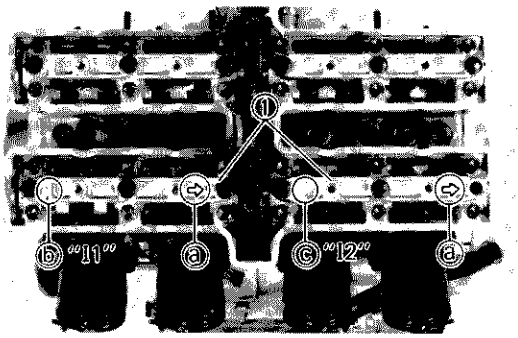
4. Align:
   - Punch mark (camshaft – exhaust) ①
     (with punch mark (camshaft cap – exhaust) ②)

Alignment steps:
- Remove the timing chain from cam sprocket.
- Using the camshaft wrench, turn the camshaft and align the punch marks.

Camshaft wrench:
YM-04115,
90890-04115

- Hang the timing chain onto the cam sprocket, taking care so that there is no slack in the chain on the exhaust side.





5. Install:
   - Camshaft (intake) ①
   - Dowel pins ②

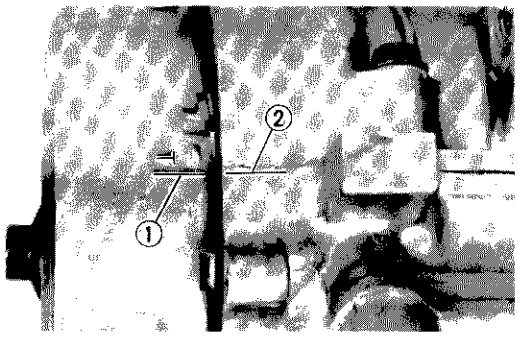
   Hung the timing drain onto the cam sprocket.

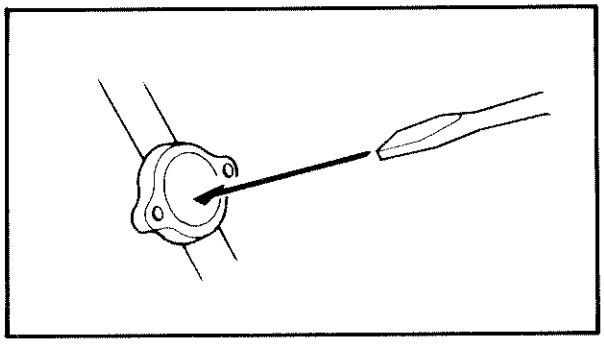
NOTE:
- Apply the molybdenum disulfide oil to the camshaft.
- Install the camshaft so that the punched mark ⓐ faces upward.

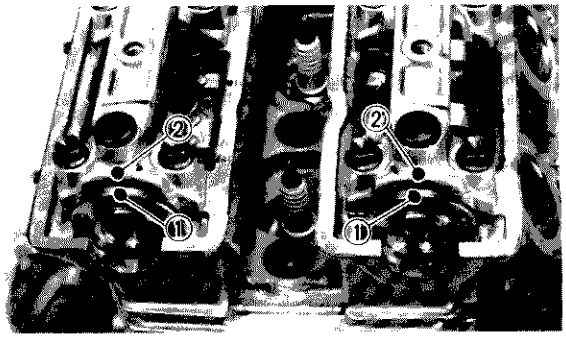
6. Install:
   - Camshaft caps ①

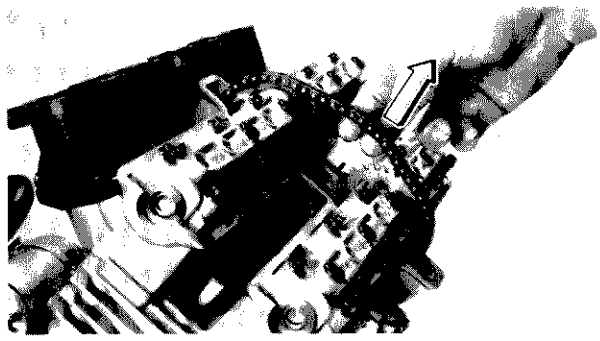
NOTE:
- Face the arrow marks ⓐ on the camshaft caps to the clutch.
- The camshaft cap with the punched mark "I1" ⓑ should be installed on the rotor side, and the "I2" ⓒ on the clutch side.
- Tighten the bolts (camshaft cap) in their proper tightening sequence and torque the bolts in two stages.

	Bolt (camshaft cap): **10 Nm (1.0 m · kg, 7.2 ft · lb)**





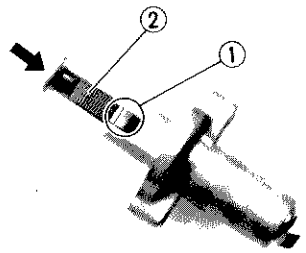


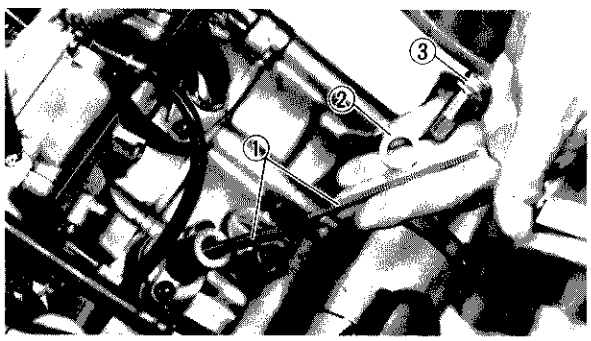


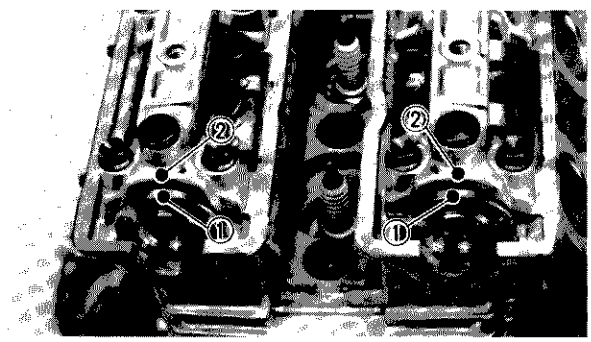
7. Check:
   - Valve timing

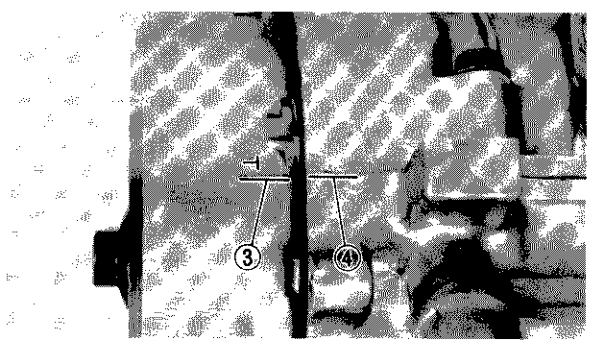
Checking steps:

- Align "T" mark ① on the rotor with the crankcase matching line ②.
- Push the timing chain through the timing chain tensioner hole.
- Check that the each punched marks ① (on camshafts) align with the punched mark ② on the camshaft caps.
- If the punched marks does not align, pull the timing chain (to increase the chain slack on upper side) and adjust valve timing by changing the engagement of the timing chain and sprocket (EX and/or IN).
- Recheck the valve timing of by following above steps.









TIMING CHAIN TENSIONER

1. Position:
   - Timing chain
     Exhaust side → Tense.
     Intake side → Slack.
2. Install:
   - Timing chain tensioner

Installation steps:
- Remove the tensioner end cap bolt and spring.
- Release the timing chain tensioner one-way cam ① and push the tension rod ② .
- Install the tensioner with a new gasket into the cylinder.

NOTE:
Position the "UP" mark on timing chain tensioner upside.

Bolts (timing chain tensioner):
10 Nm (1.0 m · kg, 7.2 ft · lb)

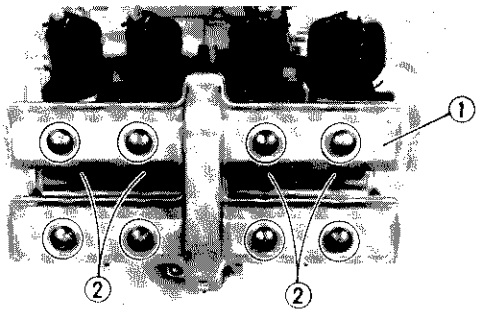
- Install the springs ① , washer ② and end cap bolt ③ .

End cap bolt (cam chain tensioner):
20 Nm (2.0 m · kg, 14 ft · lb)

3. Turn:
   - Crankshaft
     Counterclockwise for a several turns.
4. Inspect:
   - Camshaft timing marks ①
     Align with the camshaft cap marks ② .
   - Crankshaft "T" mark ③
     Align with the crankcase matching line ④ .
     Out of alignment → Adjust.
     Refer to "CAMSHAFT INSTALLATION STEPS".
5. Measure:
   - Valve clearance
     Out of specification → Adjust.
     Refer to "VALVE CLEARANCE ADJUSTMENT" section in the CHAPTER 3.

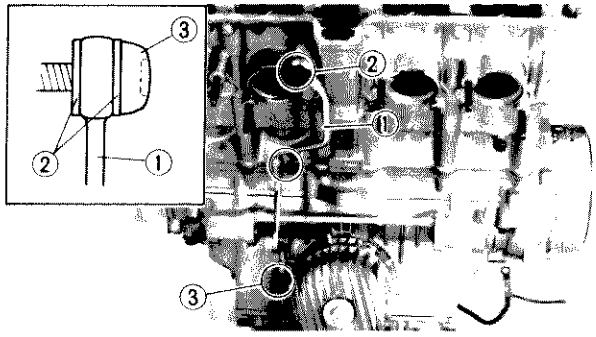
Intake valve (cold):
0.11 ~ 0.20 mm
(0.004 ~ 0.008 in)

Exhaust valve (cold):
0.21 ~ 0.30 mm
(0.008 ~ 0.012 in)



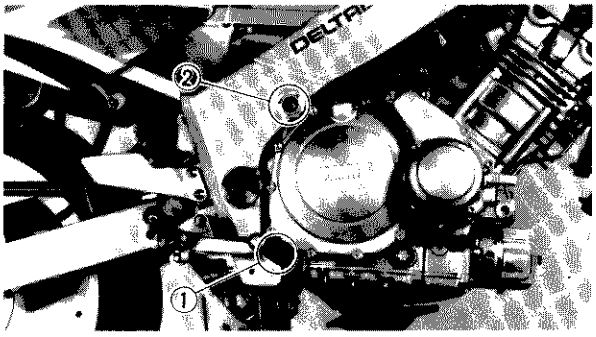
6. Install:
   - Gasket (cylinder head cover)
   - Cylinder head cover ①
   - Spark plug ②

Bolts (cylinder head cover):
10 Nm (1.0 m · kg, 7.2 ft · lb)



7. Install:
   - Oil delivery pipe ①
   - Washers (new) ②
   - Union bolts ③

Union bolts (oil delivery pipe):
20 Nm (2.0 m · kg, 14 ft · lb)

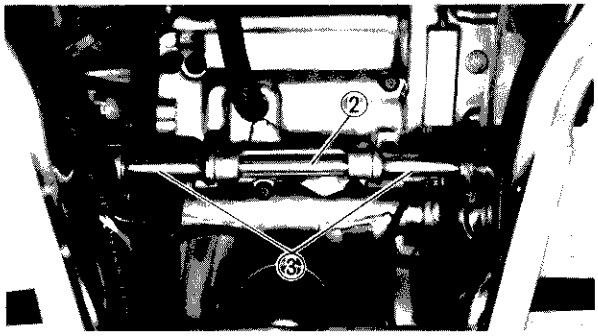


REMOUNTING ENGINE

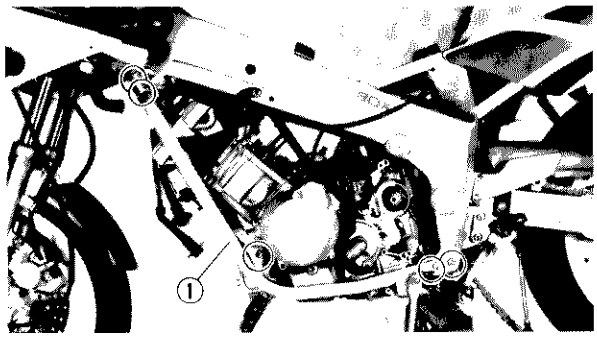
When remounting the engine, reverse the removal procedure. Note the following points.

1. Install:
   - Engine assembly
   - Bolt (engine mount – rear lower) ①
   - Bolt (engine mount – rear upper) ②

Bolt (engine mount – rear lower):
45 Nm (4.5 m · kg, 32 ft · lb)
Bolt (engine mount – rear upper):
55 Nm (5.5 m · kg, 40 ft · lb)

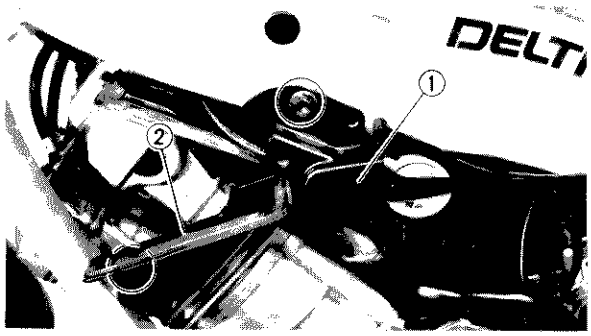


③ Collars



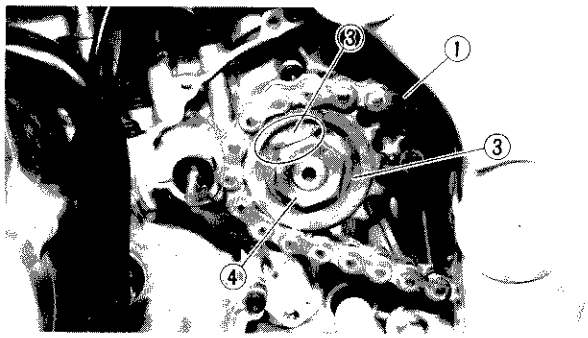
2. Install:
   - Down tube frames (left and right) ①
   - Bolt (engine – mount) ②

Bolts (down tube frame – lower):
33 Nm (3.3 m · kg, 24 ft · lb)
Bolts (down tube frame – upper):
60 Nm (6.0 m · kg, 43 ft · lb)
Use LOCTITE®
Bolt (engine mount):
55 Nm (5.5 m · kg, 40 ft · lb)



3. Install:
   - Starter lever ①
   - Cover ②

	Bolt (starter lever): **8 Nm (0.8 m · kg, 5.8 ft · lb)**



4. Install:
   - Drive chain ①
   - Drive sprocket ②
   - Lock washer (new) ③
   - Nut (drive sprocket) ④

   Bend the end of lock washer tab.

	Nut (drive sprocket): **70 Nm (7.0 m · kg, 50 ft · lb)**

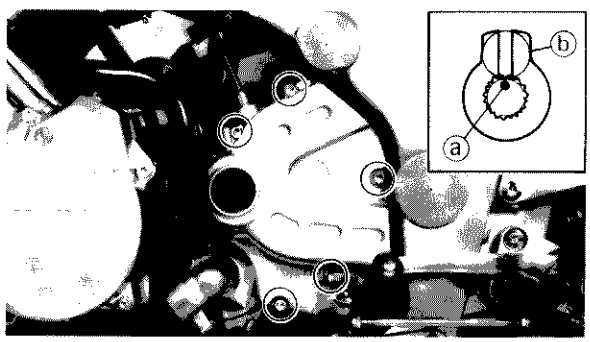
NOTE:

When tightening the nut (drive sprocket), apply the rear brake pedal and transmission gear to the 6th position.

⚠ WARNING:

Always use a new lock washer.

5. Install:
   - Collar
   - Cover (crankcase left)
   - Shift arm

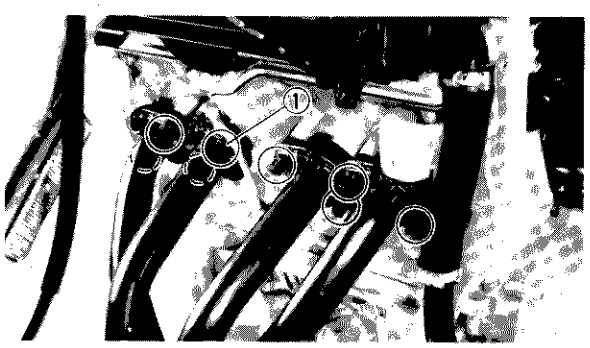


	Bolts (crankcase cover): **10 Nm (1.0 m · kg, 7.2 ft · lb)** **Use LOCTITE®** **Bolt (shift arm):** **10 Nm (1.0 m · kg, 7.2 ft · lb)**

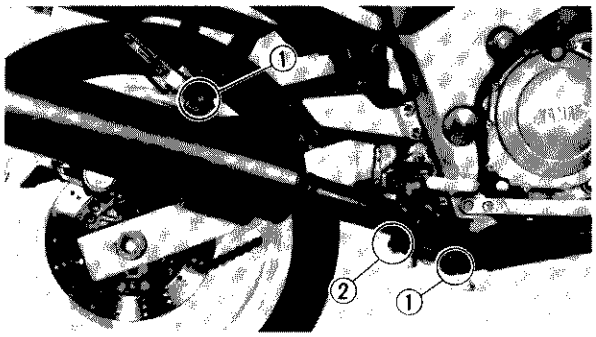
NOTE:

Align the punch mark ⓐ with the slot ⓑ on shift arm.

6. Install:
   - Muffler assembly
7. Tighten:
   - Flange nuts (exhaust pipe) ①

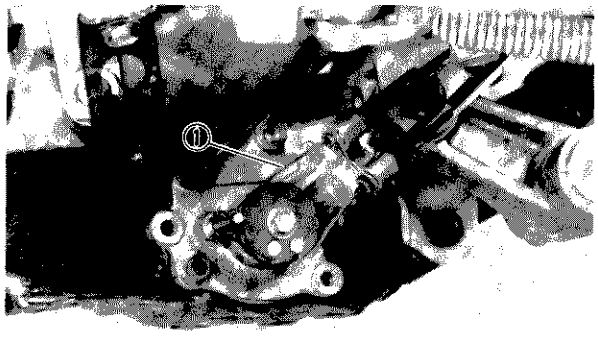


	Flange nuts (exhaust pipe): **10 Nm (1.0 m · kg, 7.2 ft · lb)** **Bolts (cowling stay):** **10 Nm (1.0 m · kg, 7.2 ft · lb)**



8. Tighten:
   - Bolt (muffler bracket) ①
   - Bolt (exhaust pipe joint) ②

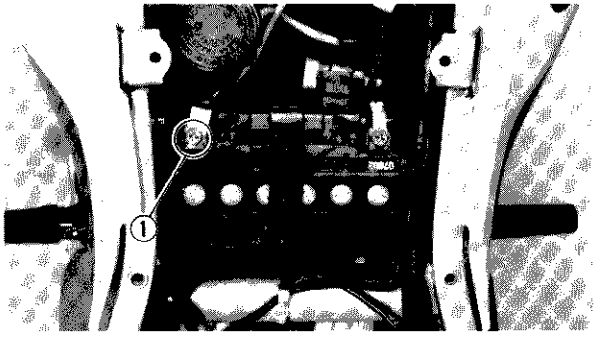
	Bolt (muffler bracket): **20 Nm (2.0 m · kg, 14 ft · lb)** **Bolt (exhaust pipe joint)** **For California only:** **20 Nm (2.0 m · kg, 14 ft · lb)**



9. Connect:
   - EXUP cables ① (FZR600WC only)
10. Install:
    - Valve cover (FZR600WC only)

	Bolt (valve cover): **10 Nm (1.0 m · kg, 7.2 ft · lb)**

11. Adjust:
    - EXUP cables (FZR600WC only)
      Refer to "EXUP CABLE ADJUSTMENT" section in the CHAPTER 3.



12. Install:
    - Radiator assembly

	Bolt (radiator): **10 Nm (1.0 m · kg, 7.2 ft · lb)**

13. Connect:
    - Battery leads

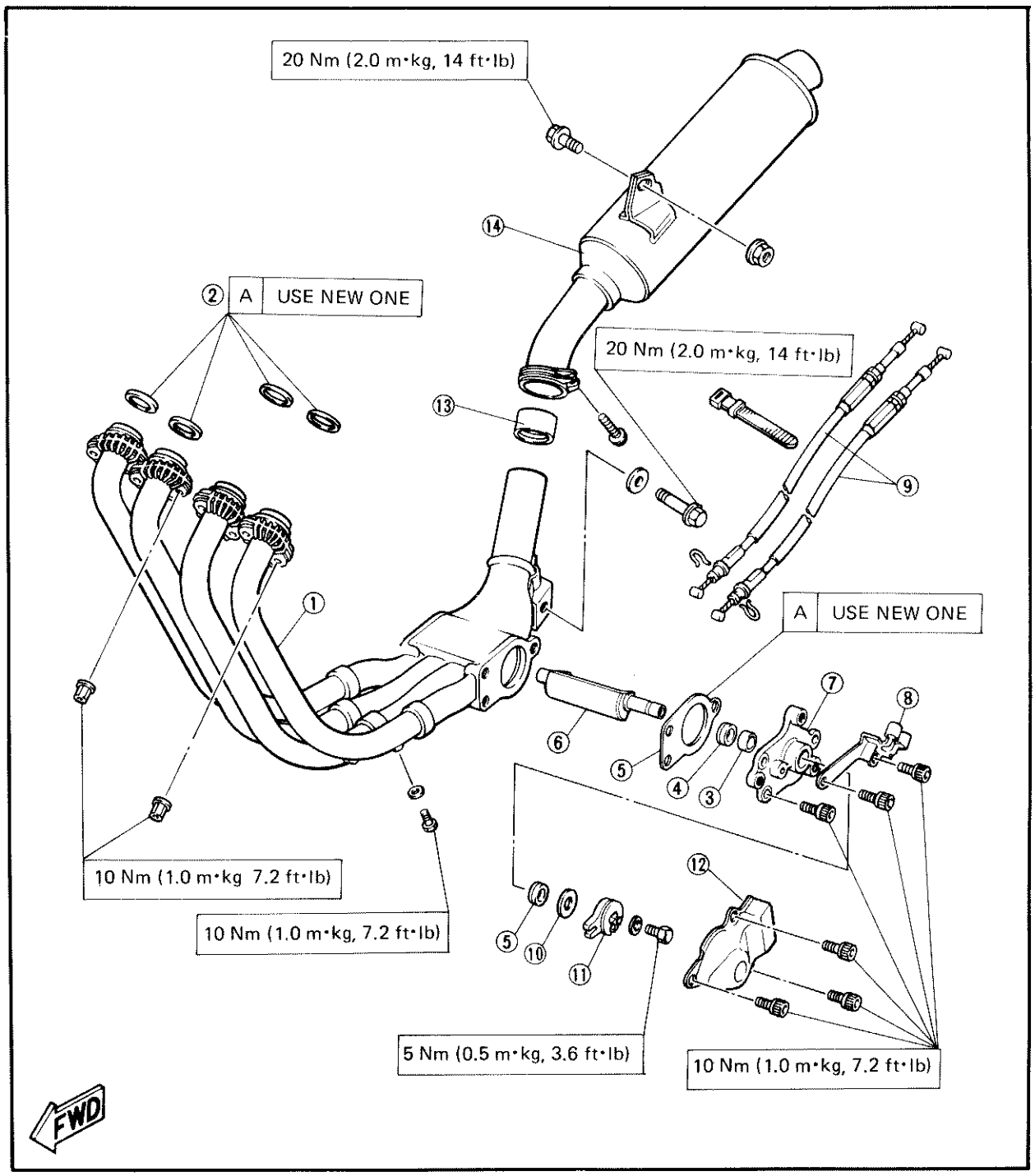
NOTE:
Connect the positive lead ① first.

14. Fill:
    - Crankcase
      With recommended engine oil.
      Refer to "ENGINE OIL REPLACEMENT" section in the CHAPTER 3.

	Total amount: **3.1 L (2.7 Imp qt, 3.3 US qt)**

EXUP VALVE (FZR600WC ONLY)

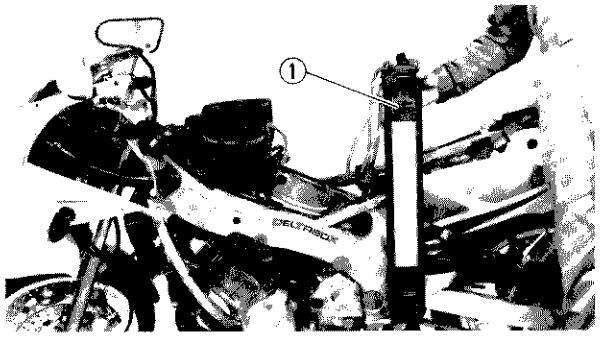
① Exhaust pipe assembly
② Gasket (Exhaust pipe)
③ Bush
④ Oil seal
⑤ Gasket
⑥ Shaft arm
⑦ Housing
⑧ Bracket
⑨ Cables
⑩ Washer
⑪ Pulley
⑫ Valve cover
⑬ Gasket (Muffler)
⑭ Muffler assembly



15. Fill:
- Cooling system

Refer to "COOLANT LEVEL INSPECTION" section in the CHAPTER 3.

Total amount:
2.2 L (2.7 Imp qt, 2.3 US qt)



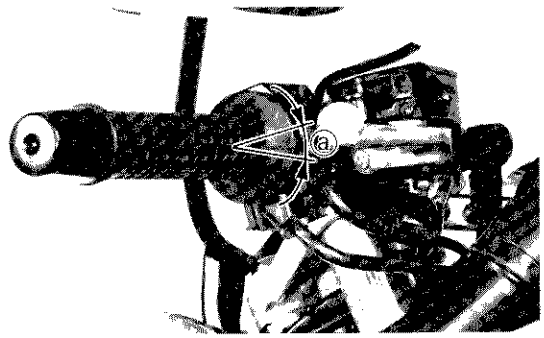
16. Adjust:
- Carburetor synchroniz

Refer to "CARBURETOR SYNCHRONIZATION" section in the CHAPTER 3.

17. Adjust:
- Idle speed

Refer to "IDLE SPEED ADJUSTMENT" section in the CHAPTER 3.

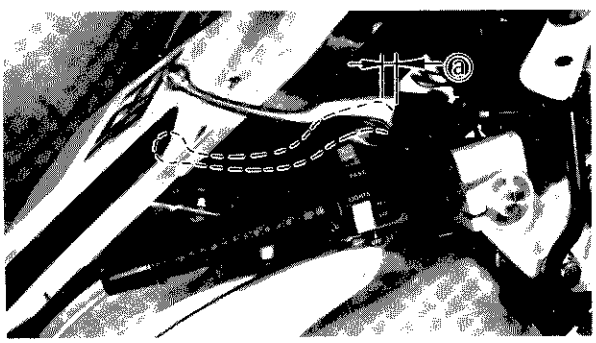
Idle speed:
1,150 ~ 1,250 r/min
1,250 ~ 1,350 r/min (FZR600WC)



18. Adjust:
- Throttle cable free play ⓐ

Refer to "THROTTLE CABLE ADJUSTMENT" section in the CHAPTER 3.

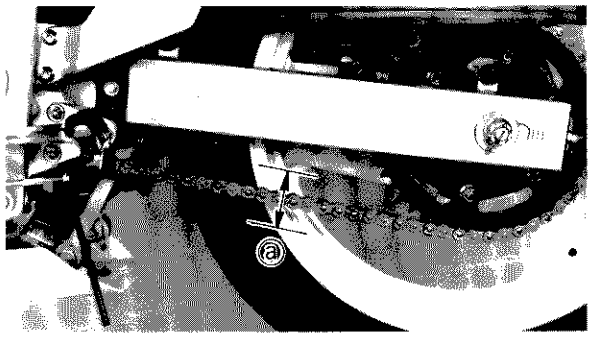
Throttle cable free play (throttle grip):
3 ~ 7 mm (0.12 ~ 0.28 in)



19. Adjust:
- Clutch cable free play

Refer to "CLUTCH CABLE ADJUSTMENT" section in the CHAPTER 3.

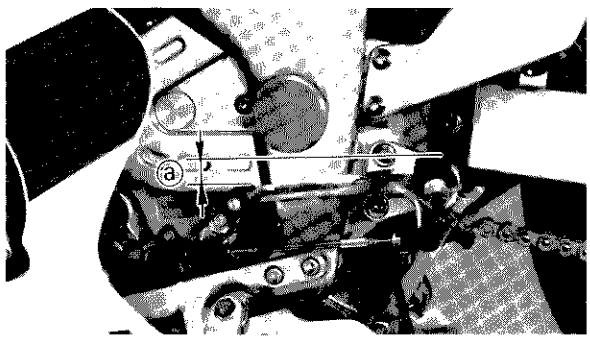
Clutch cable free play:
2 ~ 3 mm (0.08 ~ 0.12 in)



20. Adjust:
    - Drive chain slack

    Refer to "DRIVE CHAIN SLACK ADJUSTMENT" section in the CHAPTER 3.

Drive chain slack:
20 ~ 30 mm (0.8 ~ 1.2 in)



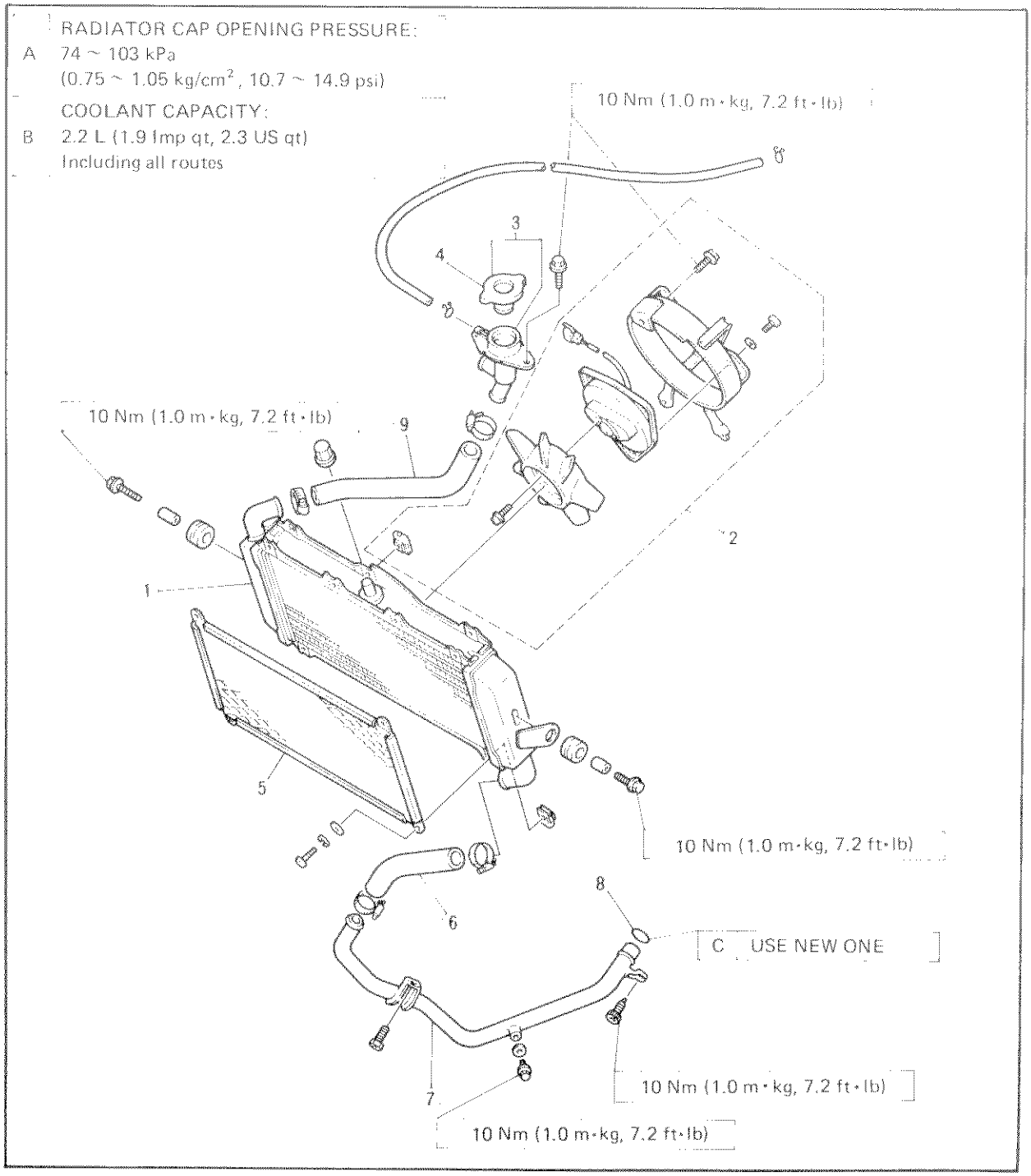
21. Adjust:
    - Change pedal height

    Refer to "CHANGE PEDAL POSITION ADJUSTMENT" section in the CHAPTER 3.

COOLING SYSTEM

RADIATOR

① Radiator assembly
② Fan motor assembly
③ Radiator cap assembly
④ Radiator cap
⑤ Radiator cover
⑥ Radiator hose (radiator – outlet)
⑦ Outlet pipe
⑧ O-ring
⑨ Radiator hose (radiator – inlet)



⚠ WARNING:

Do not remove the radiator cap when the engine and radiator are hot. Scalding hot fluid and steam may be blown out under pressure, which could cause serious injury. When the engine has cooled, open the radiator cap by the following procedure:
Place a thick rag, like a towel, over the radiator cap, slowly rotate the cap counterclockwise to the detent. This procedure allows any residual pressure to escape. When the hissing sound has stopped, press down on the cap while turning counterclockwise and remove it.

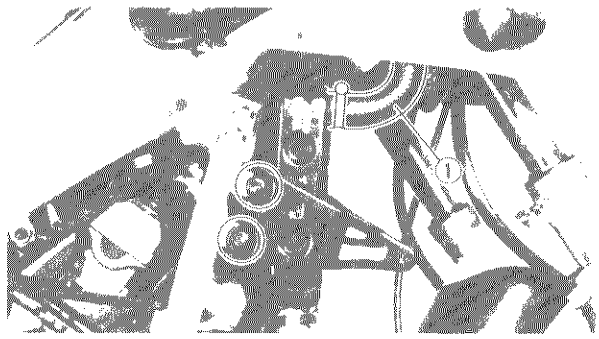
REMOVAL

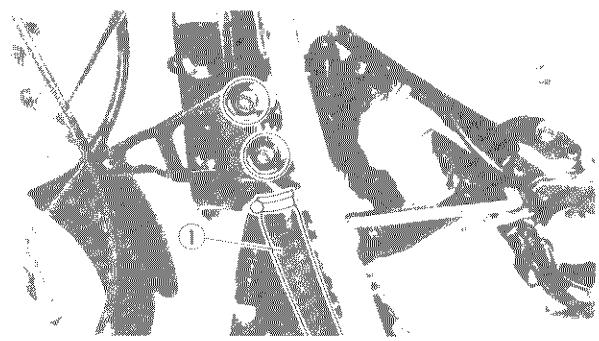
1. Remove:
   - Top cover
   - Side cowlings

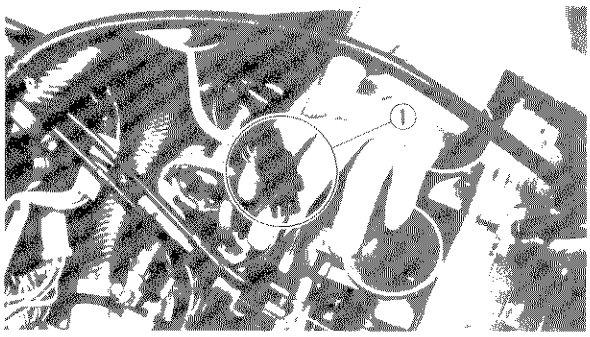
   Refer to "COWLINGS/COVERS REMOVAL AND INSTALLATION" section in the CHAPTER 3.
2. Drain:
   - Coolant

   Refer to "COOLANT REPLACEMENT" section in the CHAPTER 3.
3. Remove:
   - Fuel tank
   - Air filter case

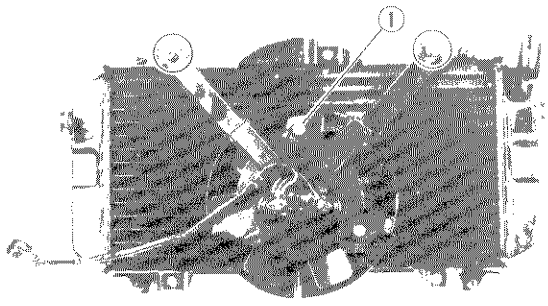
   Refer to "CARBURETER — REMOVAL" section.
4. Disconnect:
   - Fan motor lead
   - Radiator hoses ①







5. Remove:
   - Radiator assembly ①



6. Remove:
   - Fan motor assembly ①

INSPECTION

1. Inspect:
   - Radiator core

   Obstruction → Blow out with compressed air through rear of the radiator.
   Flattened fin → Repair/replace.

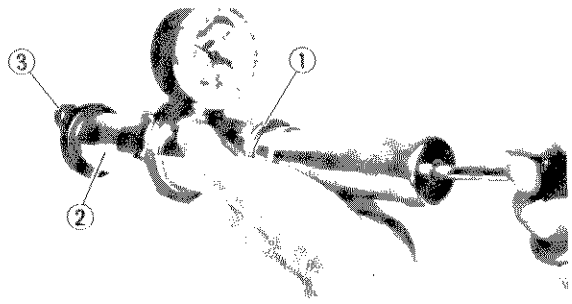
2. Inspect:
   - Radiator hoses
   - Radiator pipes

   Cracks/Damage → Replace.

3. Measure:
   - Radiator cap opening pressure

   Radiator cap opens at pressure below the specified pressure → Replace.

Radiator cap opening pressure:
74 ~ 103 kPa
(0.74 ~ 1.03 kg/cm², 10 ~ 14 psi)



Measurement steps:
- Attach the cooling system tester ① and adapter ② to the radiator cap ③.

Radiator cap tester:
YU-24460-01,
90890-01325

Adapter:
YU-33984,
90890-01352

- Apply the specified pressure for 10 seconds, and make sure there is no pressure drop.

INSTALLATION

Reverse the "REMOVAL" procedure.
Note the following points.

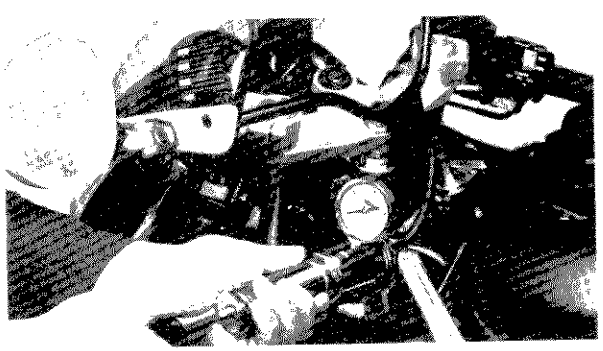
1. Install:
   - Radiator

Bolts (radiator):
10 Nm (1.0 m · kg, 7.2 ft · lb)

2. Fill:
   - Cooling system

   Refer to "COOLANT REPLACEMENT" section in the CHAPTER 3.

3. Inspect:
   - Cooling system



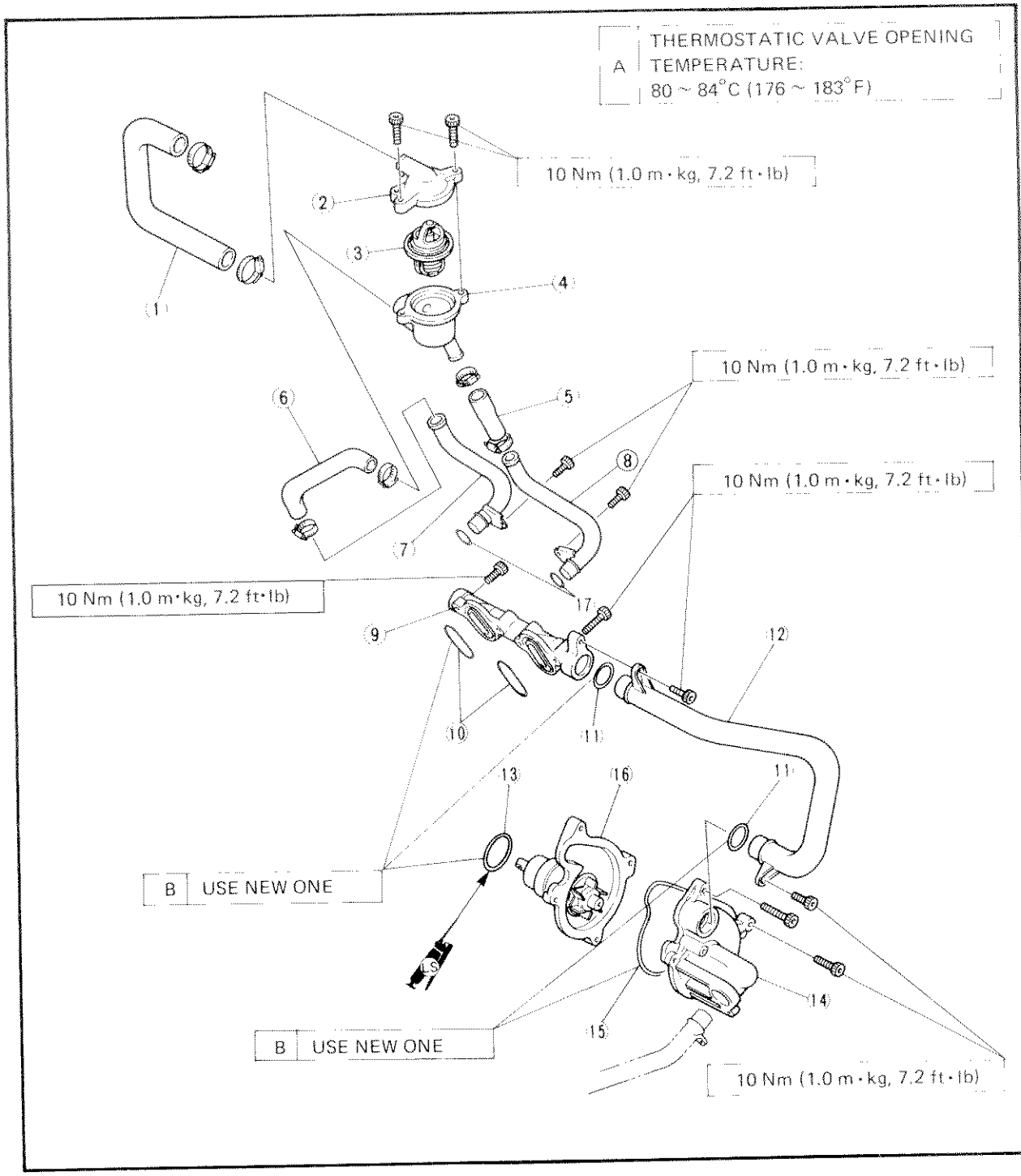
Inspection steps:
- Connect radiator cap tester.
- Apply 1.0 kg/cm² (14 lb/in²) pressure.
- Measure pressure with gauge.

  Decrease of pressure (leaks) → Repair as required.

Radiator cap tester:
YU-24460-01,
90890-01325

THERMOSTATIC VALVE AND WATER PUMP

① Radiator hose 3
② Thermostatic valve cover
③ Thermostatic valve
④ Thermostatic valve housing
⑤ Radiator hose 1
⑥ Radiator hose 2
⑦ Radiator pipe 1
⑧ Radiator pipe 2
⑨ Water jacket joint
⑩ O-ring
⑪ O-ring
⑫ Water pipe
⑬ O-ring
⑭ Water pump cover
⑮ O-ring
⑯ Water pump housing
⑰ O-ring



THERMOSTATIC VALVE

REMOVAL

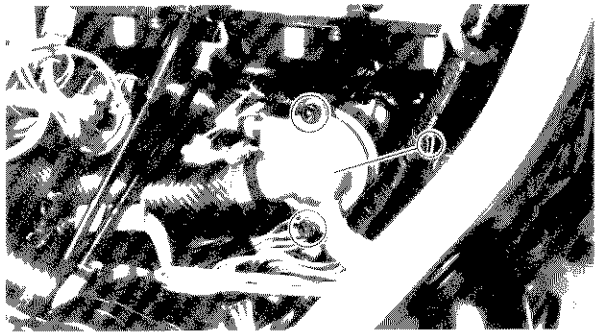
1. Remove:
   - Top cover
   - Side cowlings

   Refer to "COWLINGS/COVERS REMOVAL AND INSTALLATION" section in the CHAPTER 3.

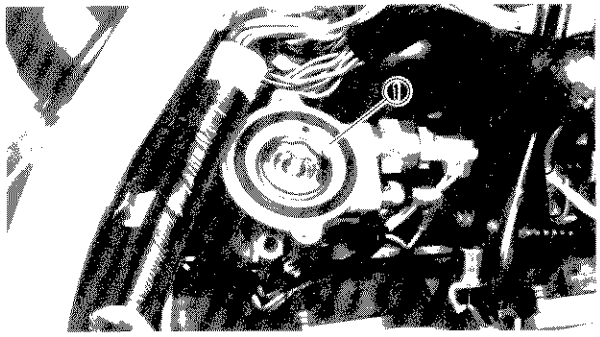
2. Drain:
   - Coolant

   Refer to "COOLANT REPLACEMENT" section in the CHAPTER 3.
3. Remove:
   - Fuel tank
   - Air filter case

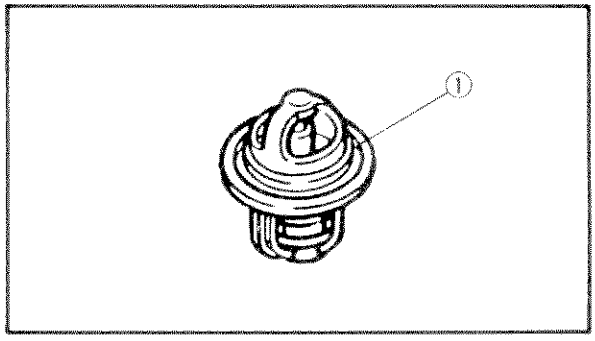
   Refer to "CARBURETER – REMOVAL" section.



4. Remove:
   - Thermostatic valve cover ①

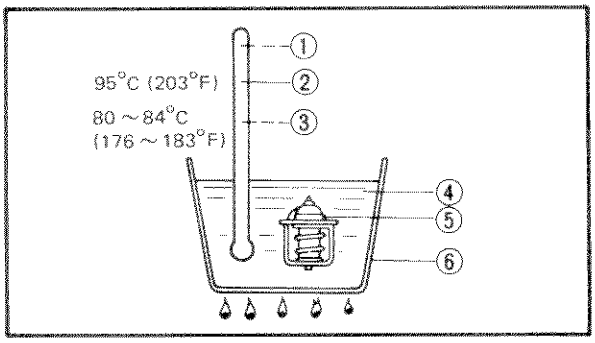


5. Remove:
   - Thermostatic valve ①



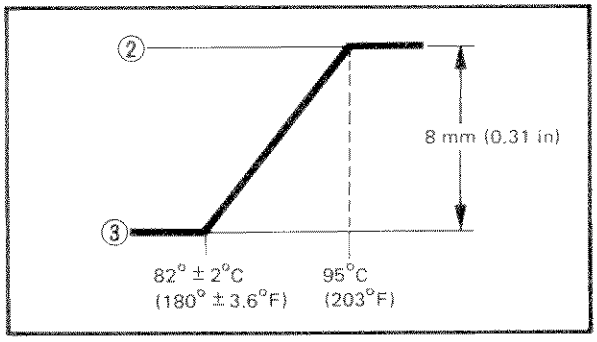
INSPECTION

1. Inspect:
   - Thermostatic valve ①
     Valve does not open at 80 ~ 84°C (176 ~ 183°F) → Replace.

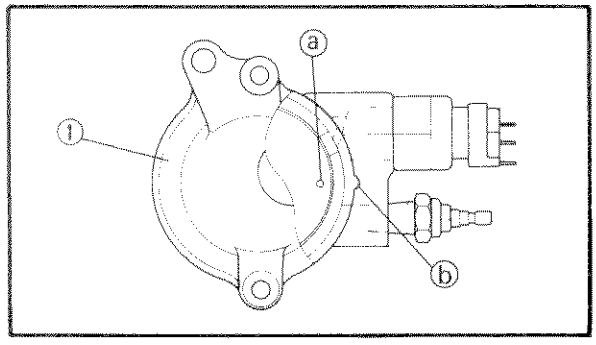


Inspection steps:
- Suspend thermostatic valve in a vessel.
- Place reliable thermometer in a water.
- Heat water slowly.
- Observe thermometer, while stirring water continually.

① Thermometer
② Full open
③ Opening sequence begins
④ Water
⑤ Thermostatic valve
⑥ Vessel
A OPEN
B CLOSE



NOTE:
Thermostatic valve is sealed and its setting is specialized work. If its accuracy is in doubt, replace it. A fualty unit could cause serious overheating or overcooling.



INSTALLATION

Reverse the "REMOVAL" procedure.
Note the following points.

1. Install:
   - Thermostatic valve ①

NOTE:
Align the hole ⓐ in thermostat with the projection ⓑ on the thermostat assembly.

2. Install:
   - Thermostatic valve cover

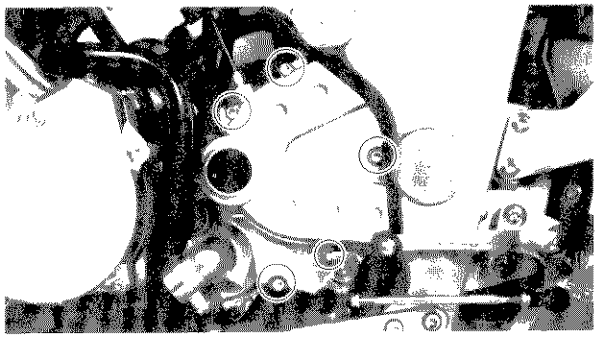
	Bolts (thermostat valve cover): 10 Nm (1.0 m · kg, 7.2 ft · lb)

3. Fill:
   - Cooling system
     Refer to "COOLANT REPLACEMENT" in the CHAPTER 3.

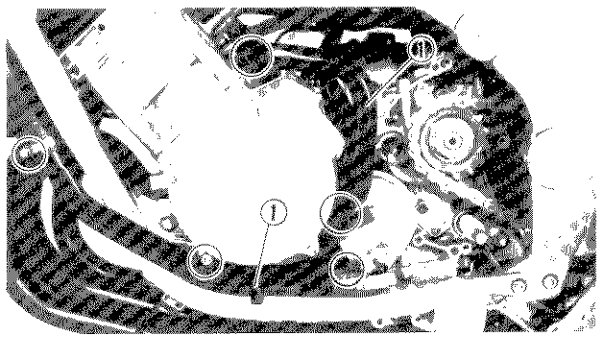
WATER PUMP

REMOVAL

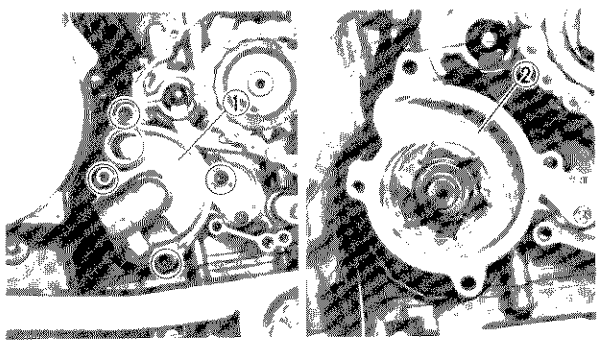
1. Remove:
   - Side cowlings
     Refer to "COWLINGS/COVERS REMOVAL AND INSTALLATION" in the CHAPTER 3.
2. Drain:
   - Coolant
     Refer to "COOLANT REPLACEMENT" section in the CHAPTER 3.
3. Remove:
   - Bolt (shift arm) ①
     Pull out the shift arm.
   - Crankcase cover (left) ②

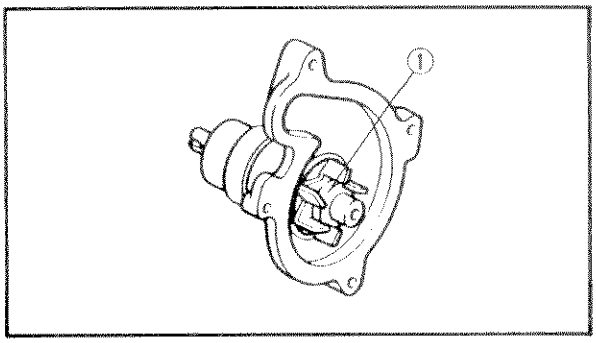


4. Remove:
   - Radiator pipes ①



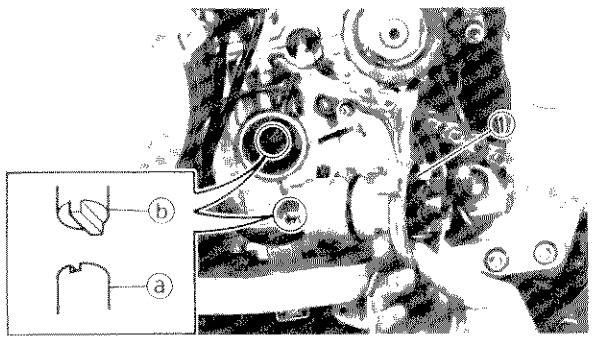
5. Remove:
   - Water pump cover ①
   - Water pump housing assembly ②





INSPECTION

1. Inspect:
   - Impeller ①
     Cracks/Wear/Damage → Replace water housing pump assembly.
   - Oil seal
     Wear/Damage → Replace water pump housing assembly.



INSTALLATION

Reverse the "REMOVAL" procedure.
Note the following points.

1. Install:
   - Water pump housing ①

NOTE:

- Align the slot ⓐ on the impeller shaft with the projection ⓑ on the oil pump shaft.
- Apply the lithium soap base grease on the o-ring.

2. Install:
   - Water pump cover
   - Radiator pipes

Bolts (radiator pipes):
10 Nm (1.0 m · kg, 7.2 ft · lb)

3. Install:
   - Crankcase cover (left)

Bolt (water pump cover):
10 Nm (1.0 m · kg, 7.2 ft · lb)
Bolts (crankcase cover):
10 Nm (1.0 m · kg, 7.2 ft · lb)

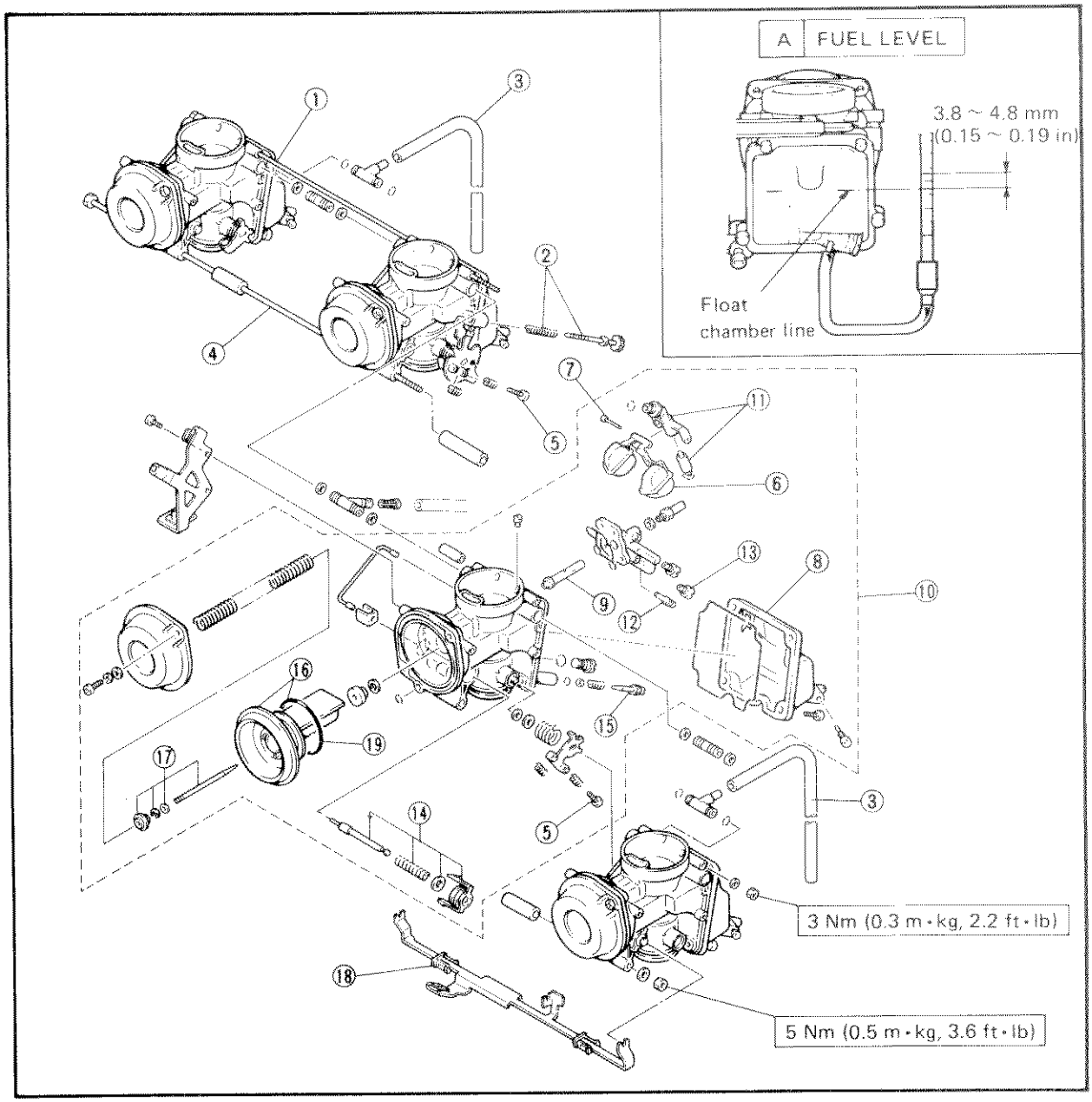
4. Fill:
   - Cooling system
     Refer to "COOLANT REPLACEMENT" section in the CHAPTER 3.

CARBURETOR

CARBURETOR

① Upper bracket
② Throttle stop screw
③ Fuel overflow hose
④ Lower bracket
⑤ Synchronizing screw
⑥ Float
⑦ Float pin
⑧ Float chamber
⑨ Main nozzle
⑩ Fuel drain screw
⑪ Valve seat assembly
⑫ Pilot jet
⑬ Main jet
⑭ Starter plunger assembly
⑮ Pilot screw
⑯ Piston valve assembly
⑰ Jet needle set
⑱ Starter lever
⑲ O-ring

SPECIFICATIONS		
	FZR600W	FZR600WC
ID MARK	3HH-00	3HW-00
MAIN JET	#107.5	#105
MAIN AIR JET	#65	←
PILOT JET	#32.5	←
PILOT AIR JET	#132.5	←
JET NEEDLE - POSITION	5CFZ4-2	5CFZ7-1
PILOT SCREW	Preset	←
THROTTLE VALVE	#130	"
ENGINE IDLE SPEED	1,150 ~ 1,250 r/min	1,250 ~ 1,350 r/min
FUEL LEVEL	3.8 ~ 4.8 mm (0.15 ~ 0.19 in)	" ←



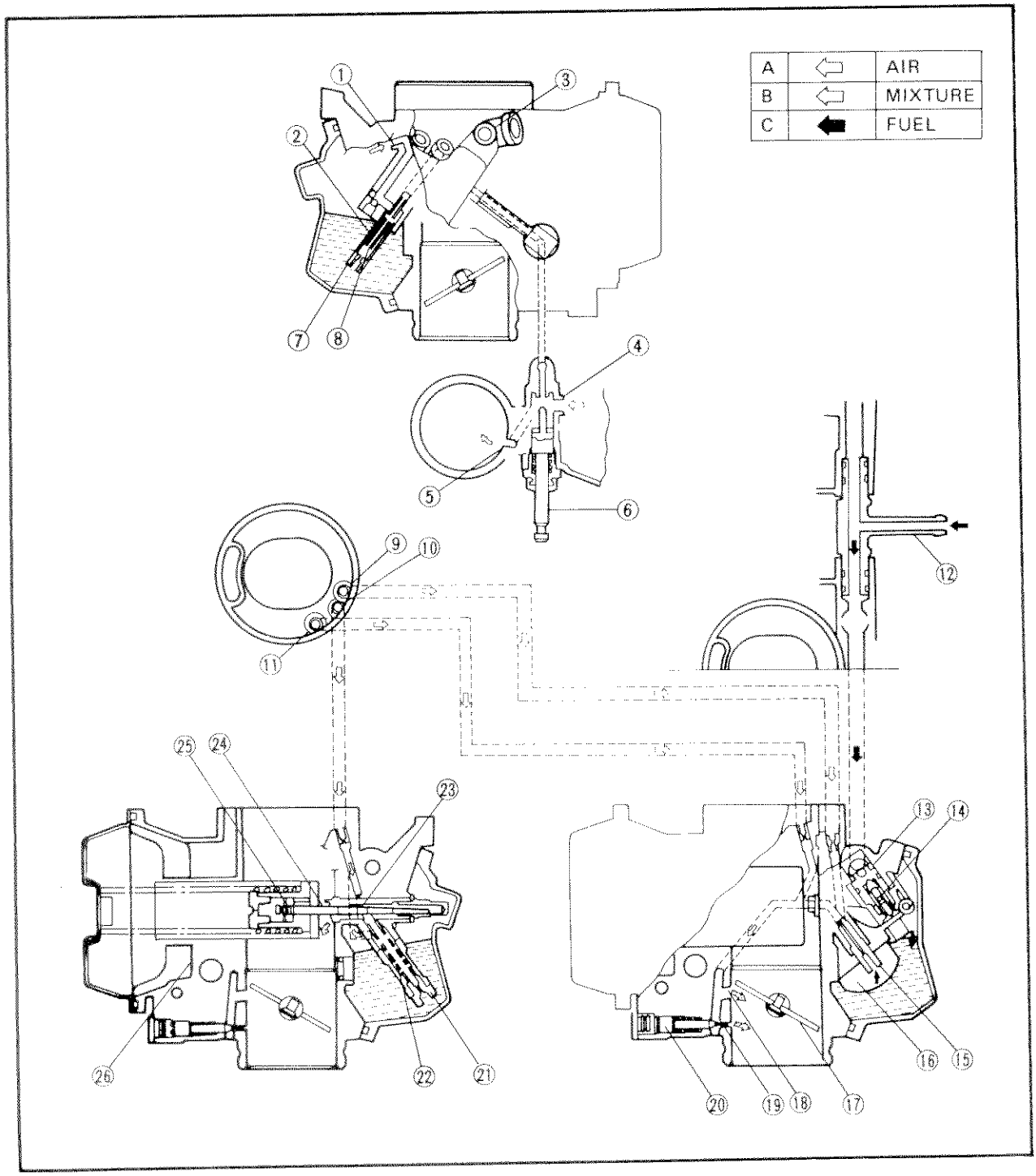
6

SECTION VIEW

① Starter air bleed
② Starter air bleed pipe
③ Air vent
④ Air inlet
⑤ Mixture outlet
⑥ Starter plunger
⑦ Starter jet No 1
⑧ Starter jet No. 2
⑨ Pilot air jet 2
⑩ Main air jet
⑪ Pilot air jet 1
⑫ Fuel inlet
⑬ Float needle valve
⑭ Valve seat
⑮ Pilot jet
⑯ Float
⑰ Throttle valve
⑱ Bypass hole
⑲ Pilot outlet
⑳ Pilot screw
㉑ Main jet
㉒ Main bleed pipe
㉓ Needle jet
㉔ Jet needle
㉕ Spring clip
㉖ Piston valve

⚠ CAUTION:

The pilot air screw settings are adjusted for maximum performance at the factory. Any attempt to change these settings will decrease engine performance.

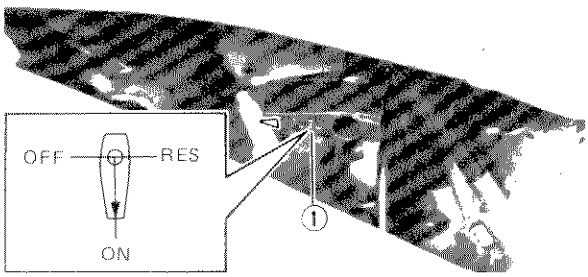


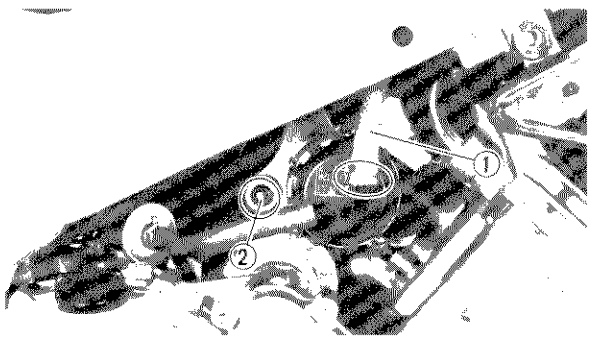
REMOVAL

1. Remove:
   - Seat
   - Top cover
   - Side cowlings

   Refer to "COWLINGS/COVERS REMOVAL AND INSTALLATION" section in the CHAPTER 3.

2. Turn the fuel cock ① to "OFF".



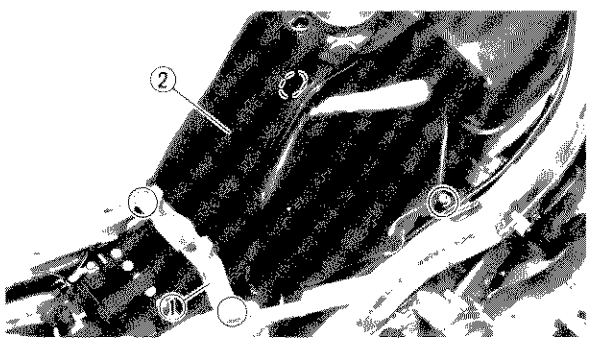


3. Disconnect:
   - Fuel hoses ①

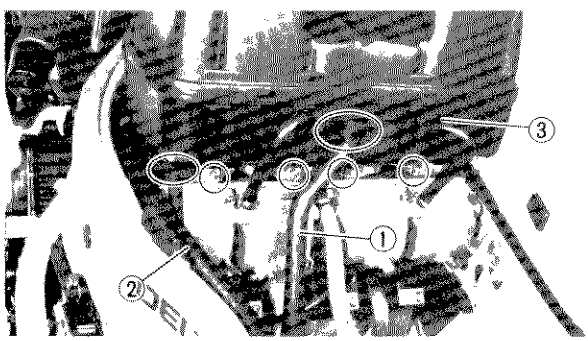
⚠ WARNING:

Gasoline is highly flammable.
Avoid spilling fuel on the hot engine.

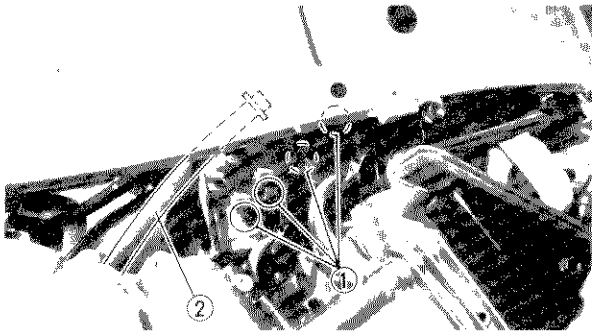
4. Remove:
   - Bolt (fuel pump) ②



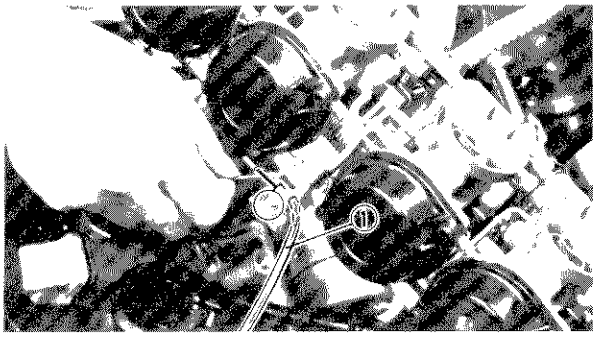
5. Remove:
   - Fuel tank bracket ①
   - Fuel tank ②



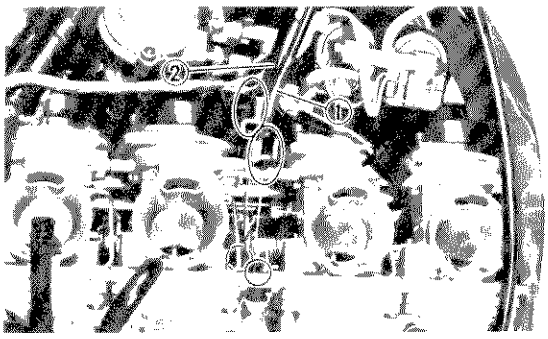
6. Disconnect:
   - Crankcase ventilation hose ①
   - Air vent hose ②
7. Remove:
   - Air filter case ③



8. Loosen:
   - Bolts (carburetor joint) ①
9. Disconnect:
   - Fuel hose ②
10. Remove:
   - Carburetor assembly (from carburetor joint)



11. Disconnect:
   - Starter calbe ①



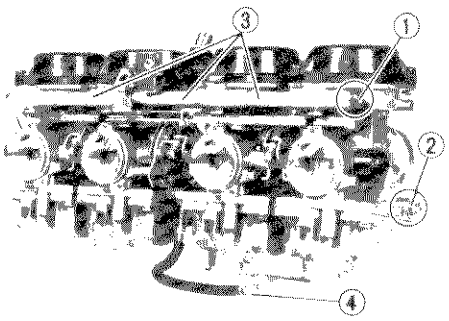
12. Disconnect:
   - Throttle cable 1 ①
   - Throttle cable 2 ②

DISASSEMBLY

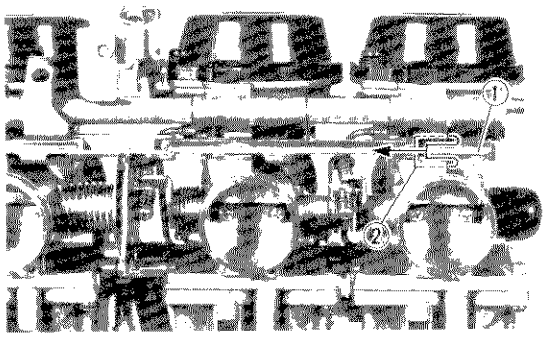
NOTE:

The following parts can be cleaned and inspected without carburetor separation.
(All inner parts except starter plunger can be cleaned and inspected without carburetor separation.)

- Throttle valve
- All jets
- Float
- Needle valve
- Main nozzle
- Jet needle

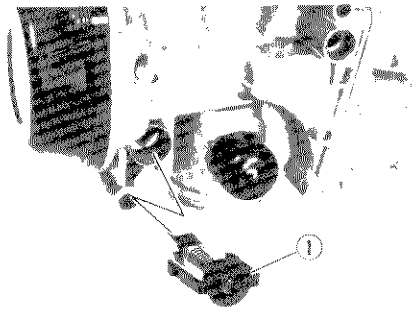


1. Remove:
   - Connecting bolt (upper) ①
   - Connecting bolt (lower) ②
   - Collars ③
   - Fuel hose joint
   - Screw (throttle stop screw bracket) ④

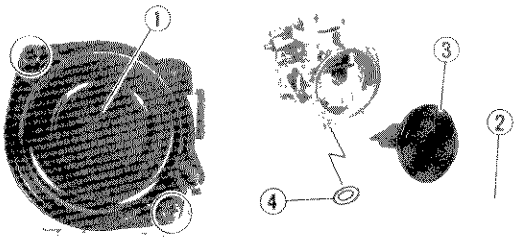


2. Remove:
   - Starter lever ①

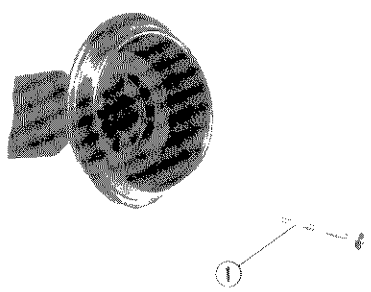
   Slide the stopper ② to remove the starter lever.



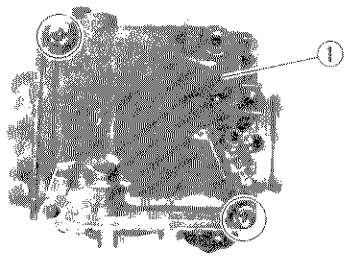
3. Remove:
   - Starter plunger ①



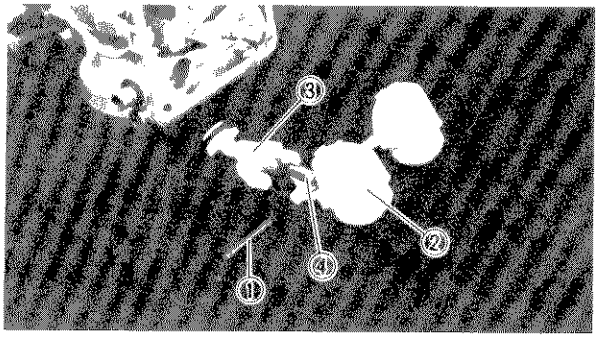
4. Remove:
   - Vacuum chamber cover ①
   - Spring ②
   - Throttle valve ③
   - O-ring ④



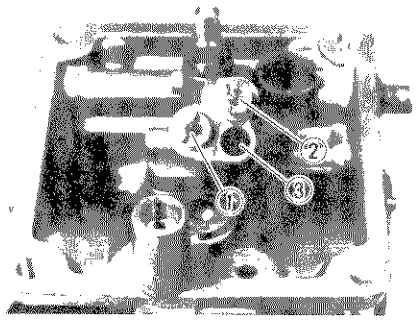
5. Remove:
   - Jet needle ①



6. Remove:
   - Float chamber ①

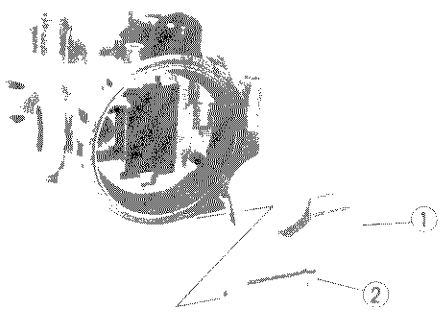


7. Remove:
   - Float pin ①
   - Float ②
   - Valve seat ③
   - Needle valve ④

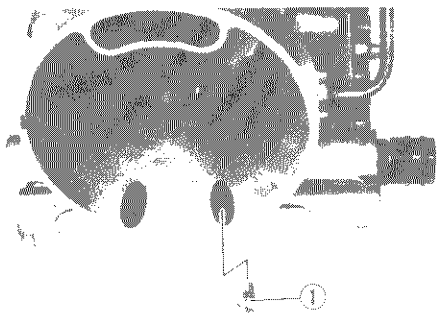


8. Remove:
   - Main jet ①
   - Starter jet ②
   - Pilot jet ③

9. Remove:
   - Bolt ①
   - Washer ②
   - Holder ③



10. Remove:
    - Throttle valve support ①
    - Main nozzle ②



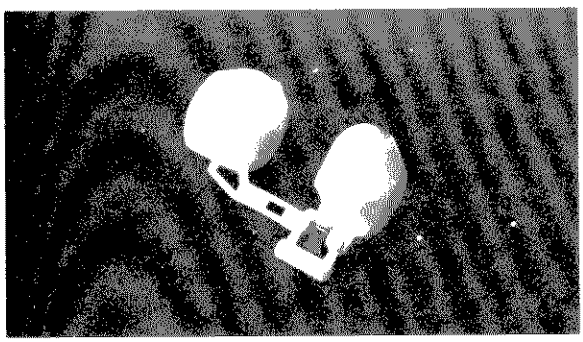
11. Remove
    - Pilot air jet ①

INSPECTION

1. Inspect:
    - Carburetor body
    - Float chamber
    - Fuel passage

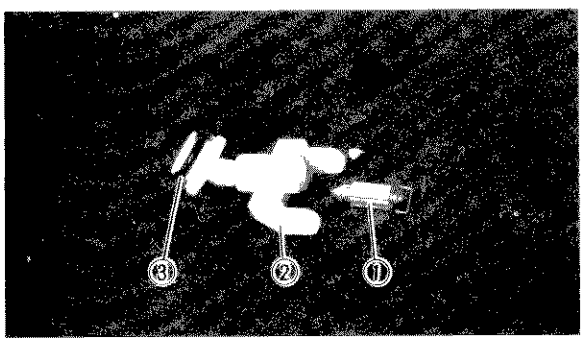
    Contamination → Clean as indicated.

Cleaning steps:
- Wash carburetor in petroleum based solvent. (Do not use any caustic carburetor cleaning solution.)
- Blow out all passages and jets with a compressed air.



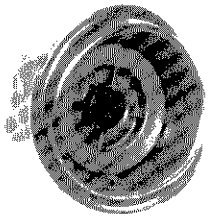
2. Inspect:
    - Floats

    Damage → Replace.

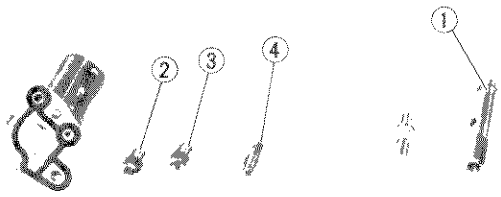


3. Inspect:
    - Float needle valve ①
    - Valve seat ②
    - O-ring ③

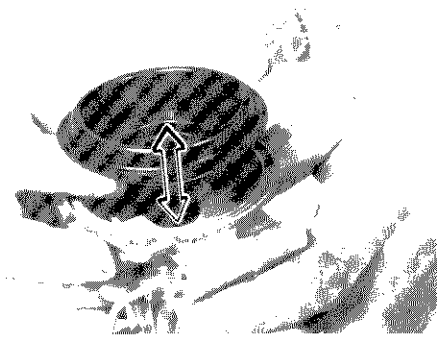
    Damage/Wear/Contamination → Replace as a set.



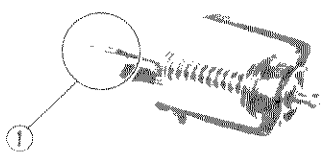
4. Inspect:
   - Throttle valve
     Scratches → Replace.
   - Rubber diaphragm
     Tears → Replace.



5. Inspect:
   - Main nozzle ①
   - Main jet ②
   - Starter jet ③
   - Pilot jet ④
   - Pilot air jet
     Bends/Wear/Damage → Replace.
     Contamination → Blow out jets with a compressed air.



6. Check:
   - Free movement
     Insert the throttle valve into the carburetor body, and check for free movement.
     Stick → Replace.



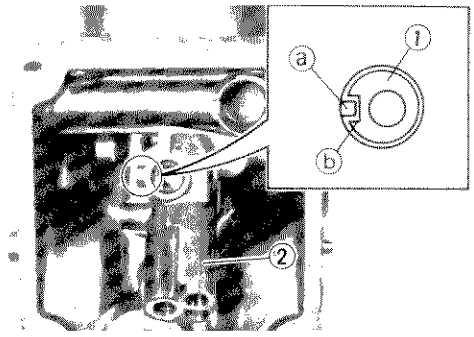
7. Inspect:
   - Starter plunger ①
     Wear/Damage → Replace.

ASSEMBLY

To assemble the carburetor, reverse the disassembly procedures. Note the following points.

⚠ CAUTION:

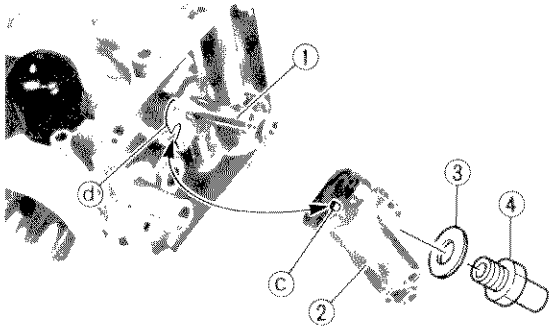
- **Before reassembling, wash all parts in clean petroleum based solvent.**
- **Always use a new gasket.**

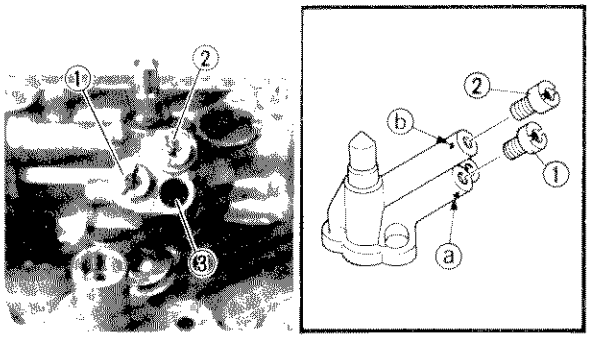


1. Install:
   - Throttle valve support
   - Main nozzle ①
   - Holder ②
   - Washer ③
   - Bolt ④

NOTE:

- Align the projection ⓐ on holder with the slot ⓑ on main nozzle.
- Align the projections ⓒ on the holder bottom with the slot ⓓ on the carburetor body.

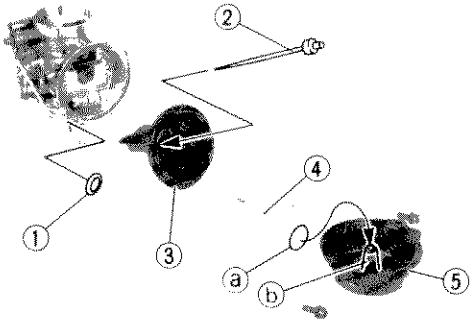




2. Install:
   - Main jet ①
   - Starter jet ②
   - Pilot jet ③

NOTE:

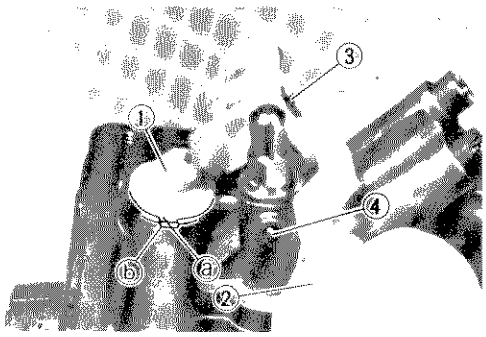
The jet with a bigger eye is main jet ① , it should be installed on ⓐ position.
The jet with a smaller eye is starter jet ② , it should be installed on ⓑ position.



3. Install:
   - O-ring ①
   - Jet needle ②
   - Throttle valve ③
   - Spring ④
   - Vacuum chamber cover ⑤

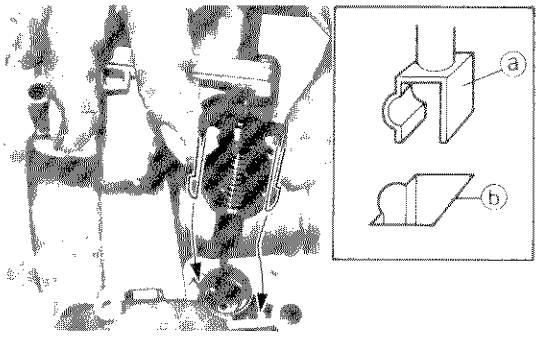
NOTE:

Insert the spring end ⓐ onto the projection ⓑ on the vacuum chamber cover.



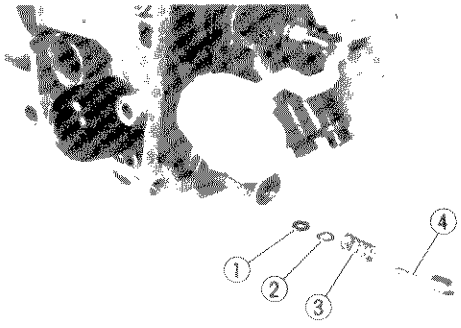
4. Install:
   - Valve seat ①
   - Float ②
   - Float pin ③

NOTE:
Align the projection ⓐ on valve seat with the slot ⓑ on carburetor body.



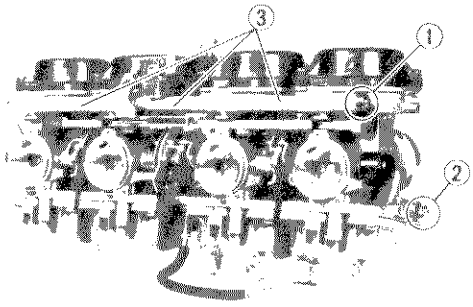
5. Install:
   - Starter plunger ①

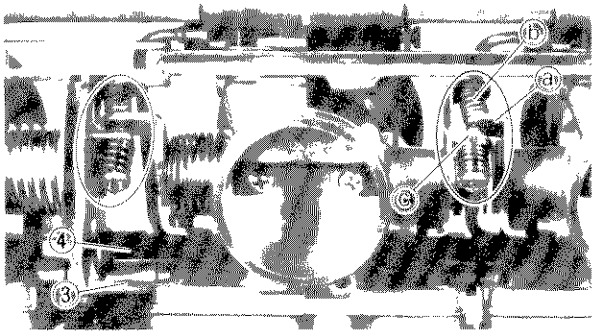
NOTE:
Install with the float surface ⓐ of the starter plunger on that ⓑ of the carburetor body.



6. Install:
   - Connecting bolt (upper) ①
   - Connecting bolt (lower) ②
   - Collars ③
   - Fuel hose joint
     To carburetors (#1 ~ #4)

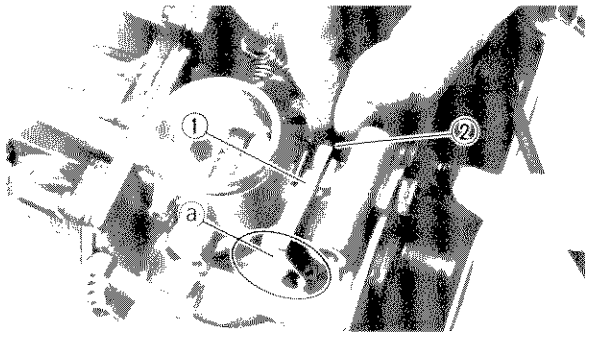
NOTE:
- Do not tighten the connecting bolts yet.
- Insert the throttle arm ⓐ (each carburetor) between the spring ⓑ and projection ⓒ.

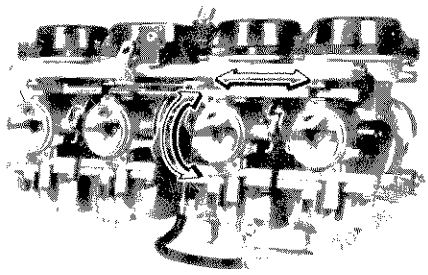




7. Install:
   - Starter lever ①

NOTE:
- Hook the starter lever arm ⓐ onto each starter plunger.
- Insert the stopper ② into the slot on carburetor body.



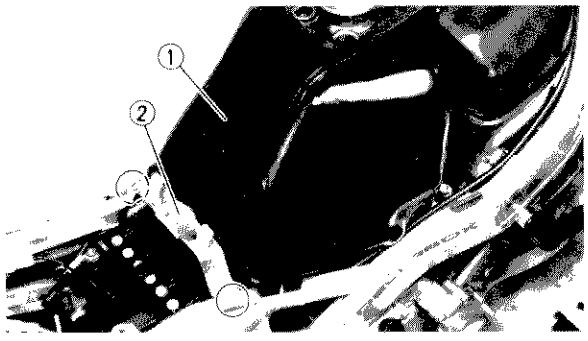


8. Tighten:
   - Connecting bolts

   Place the carburetor assembly on a surface plate with the manifold side down, then tighten the connecting bolts while pushing down the respective carburetors with an even force.

	Connecting bolt (upper): 3 Nm (0.3 m · kg, 2.2 ft · lb) **Connecting bolt (lower):** 5 Nm (0.5 m · kg, 3.6 ft · lb)

NOTE:
After tightening check the throttle lever and starter lever for smooth action.



INSTALLATION

Reverse the "REMOVAL" procedure.
Note the following points.

1. Install:
   - Fuel tank ①

	Bolts (fuel tank): 14 Nm (1.4 m · kg, 10.2 ft · lb)

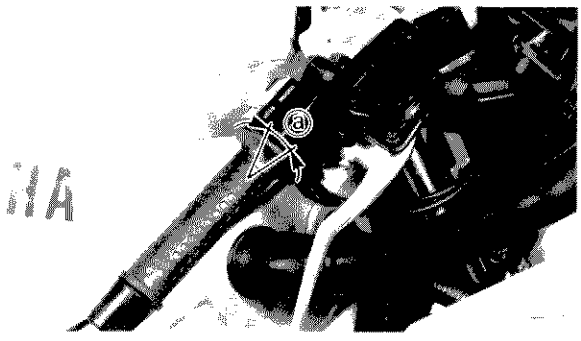
2. Install:
   - Fuel tank bracket ②

	Bolts (fuel tank bracket): 10 Nm (1.0 m · kg, 7.2 ft · lb)

3. Adjust:
   • Idle speed

Idle Speed:
1,150 ~ 1,250 r/min
1,250 ~ 1,350 r/min (FZR600WC)

Refer to "IDLE SPEED ADJUSTMENT" section in the CHAPTER 3.

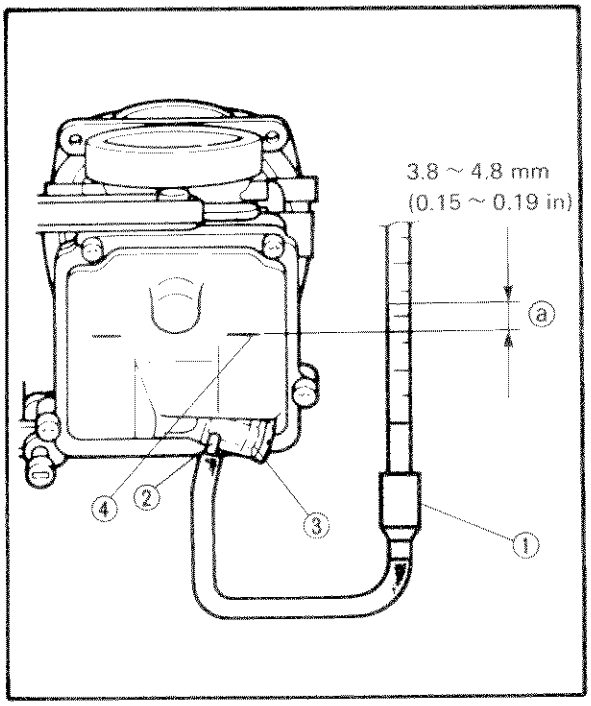


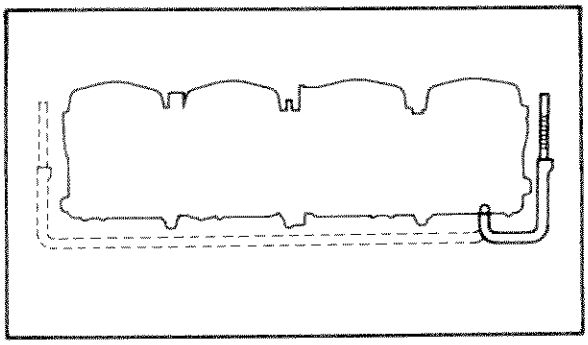
4. Adjust:
   • Throttle cable free play ⓐ

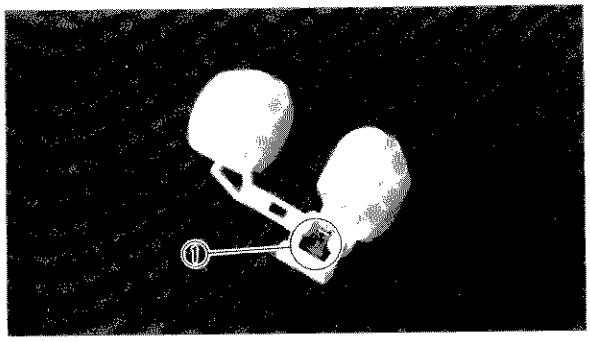
Throttle cable free play:
3 ~ 7 mm (0.12 ~ 0.28 in)

Refer to "THROTTLE CABLE ADJUSTMENT" section.

5. Adjust:
   • Carburetor synchronization
   Refer to "CARBURETOR SYNCHRONIZATION" in the CHAPTER 3.







ADJUSTMENT

Fuel Level Adjustment

1. Measure:
   - Fuel level ⓐ

   Out of specification → Adjust.

Fuel level ⓐ :
3.8 ~ 4.8 mm (0.15 ~ 0.19 in)
Below the float chamber line.

Fuel level measurement and adjustment steps:
- Place the motorcycle on a level surface.
- Use a garage jack under the engine to ensure that the carburetor is positioned vertically.
- Connect the Fuel Level Gauge ① to the drain pipe ② .

Fuel level gauge:
YM-01312
90890-01312

- Loosen the drain screw ③ and warm up the engine for several minutes.
- Hold the gauge vertically next to the float chamber line ④ .
- Measure the fuel level a with the gauge.

NOTE:
Fuel level readings of both side of carburetor line should be equal.

- If the fuel level is incorrect, adjust the fuel level.
- Remove the float chamber, float, valve seat and the needle valve.
- Inspect the valve seat and needle valve.
- If either is worn, replace them both.
- If both are fine, adjust float level by bending the float tang ① slightly.
- Install the carburetor.
- Recheck the fuel level.

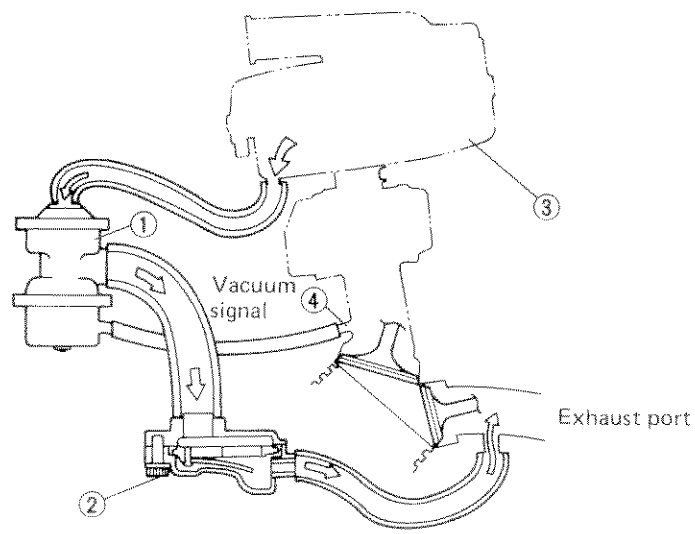
AIR INJECTION (For California)

AIR INJECTION (AIR INDUCTION SYSTEM)

It is re-burning of un-burned exhaust gas by mixing fresh air (secondary air) at the exhaust port to reduce hydrocarbon.

When the pressure around the exhaust port becomes genative, the reed valve is opened and the secondary air flows into the exhaust port. Required temperature for re-burning of un-burned exhaust gas is approximately 600° to 700°C.

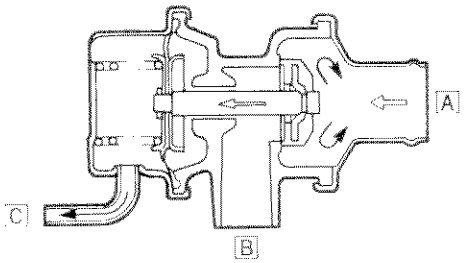
Air Injection System Configuration



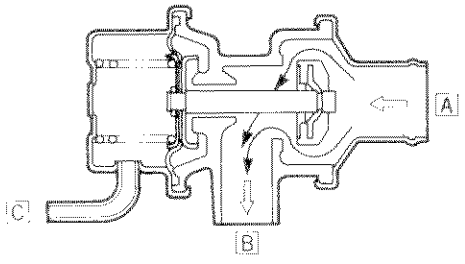
AIR CUT VALVE

Air cut valve is operated by intake gas pressure through the diaphram. Normally, this valve is opened in order to allow fresh air to flow into the exhaust port. When the throttle is closed rapidly, negative pressure is generated and this valve is closed in order to prevent after-burning.

Air Cut Valve



VIEW 1. (NO FLOW)



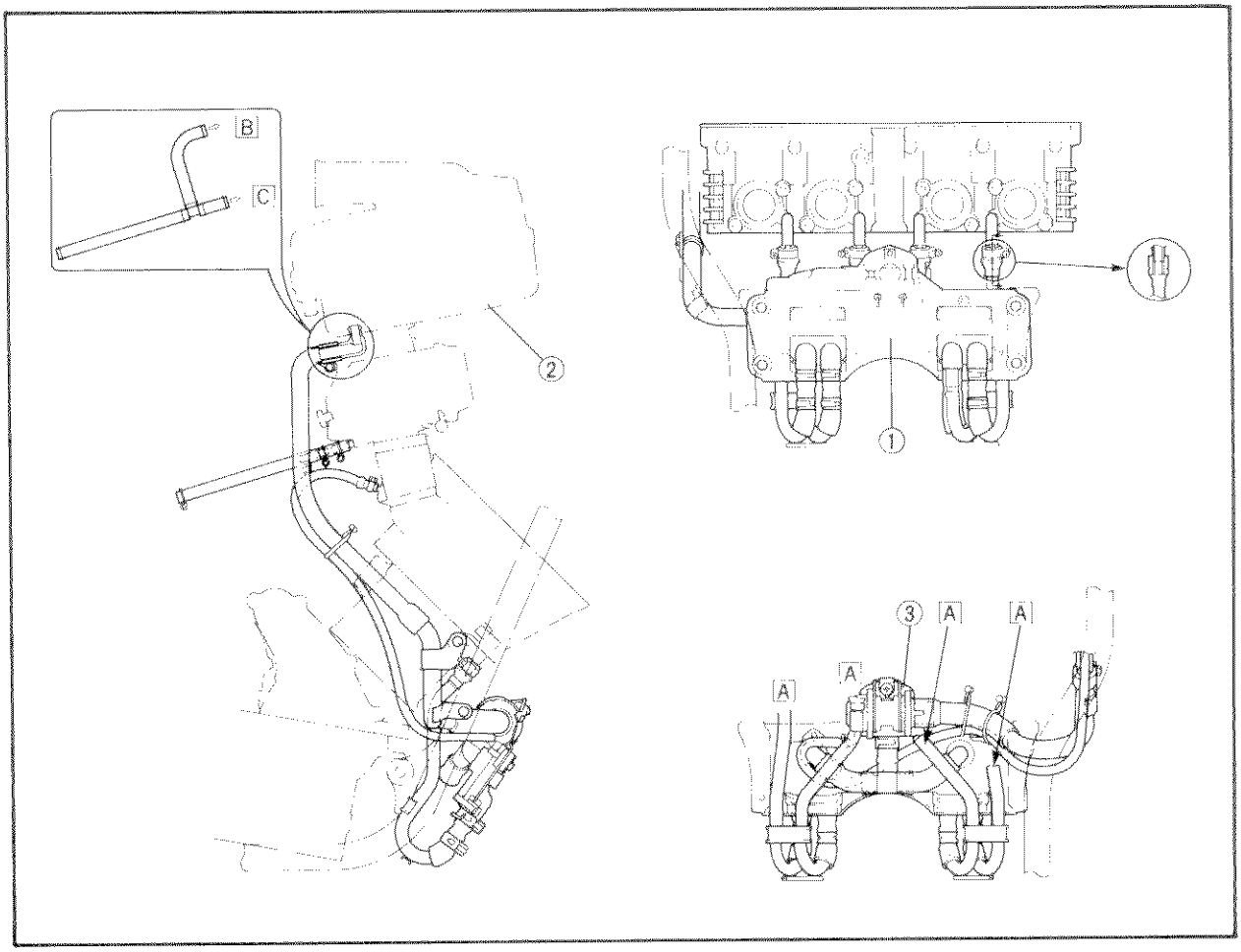
VIEW 2. (FLOW)

VIEW 1. (NO FLOW)
Valve will be closed at the time of decelaration by closing throttle.

VIEW 2. (FLOW)
Valve is opened during normal operation.

[A] From air cleaner
[B] To reed valve
[C] To carburetor joint

① Reed valve
② Air cleaner
③ Air cut valve
A To cylinders
B To No. 3 cylinder
C To No. 4 cylinder



AIR INDUCTION SYSTEM INSPECTION

1. Inspect:
   - Hose connection
     Poor connection → Correct.
   - Hoses
   - Reed valves
   - Air cut valve
   - Air filter
     Cracks/Damage → Replace.
     Clogs → Clean.

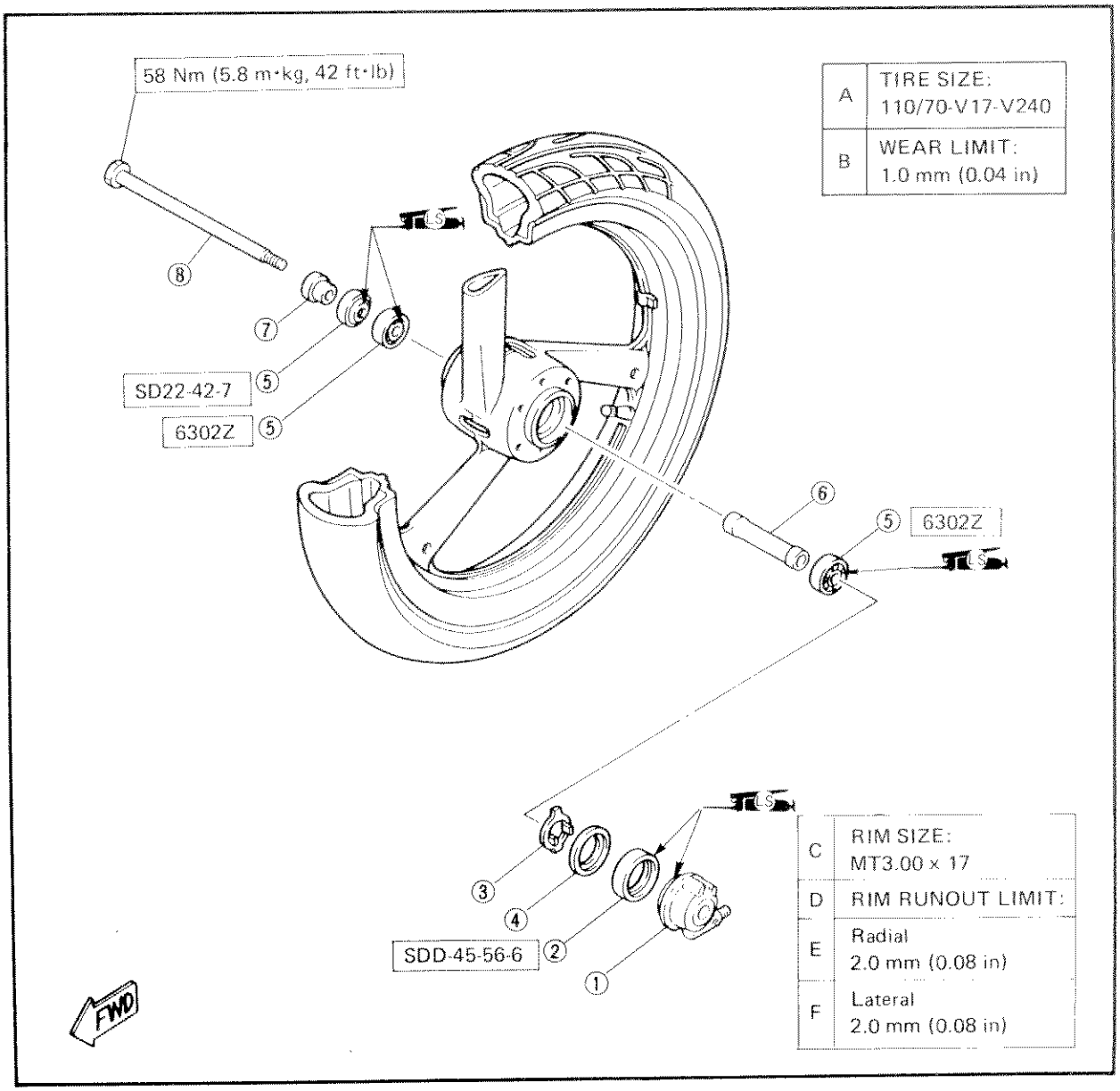
CHASSIS

FRONT WHEEL

① Gear unit assembly
② Oil seal
③ Meter clutch
④ Clutch retainer
⑤ Bearing
⑥ Spacer
⑦ Collar
⑧ Wheel axle

TIRE AIR PRESSURE (COLD):		
Cold tire pressure	Front	Rear
Up to 90 kg (198 lb) load*	200 kPa (2.0 kg/cm², 28 psi)	230 kPa (2.3 kg/cm², 32 psi)
90 kg (198 lb) ~ Maximum load*	200 kPa (2.0 kg/cm², 28 psi)	250 kPa (2.5 kg/cm², 36 psi)
High speed riding	200 kPa (2.0 kg/cm², 28 psi)	250 kPa (2.5 kg/cm², 36 psi)
Maximum load*	159 kg (351 lb) 154 kg (340 lb) (FZR600WC)	

* Load is the total weight of cargo, rider, passenger, and accessories.



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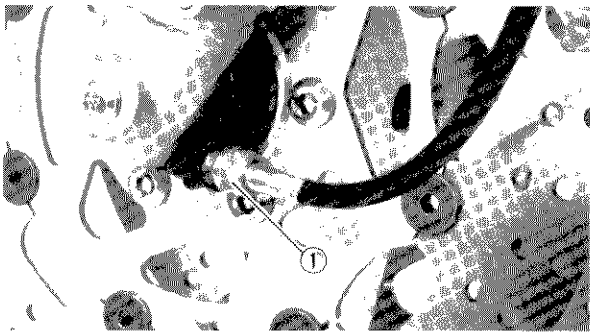
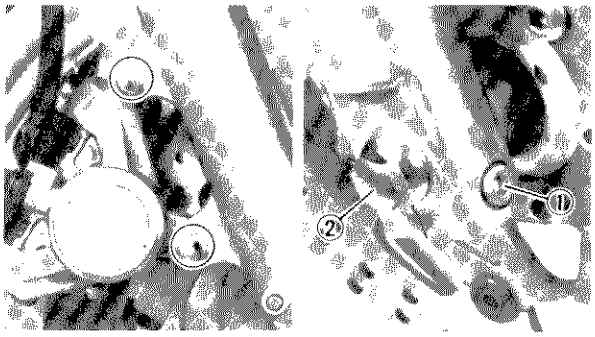
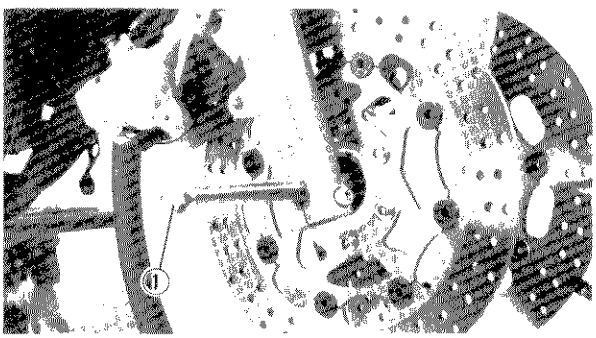
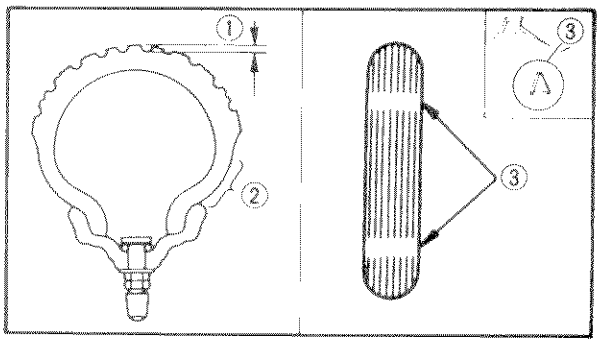
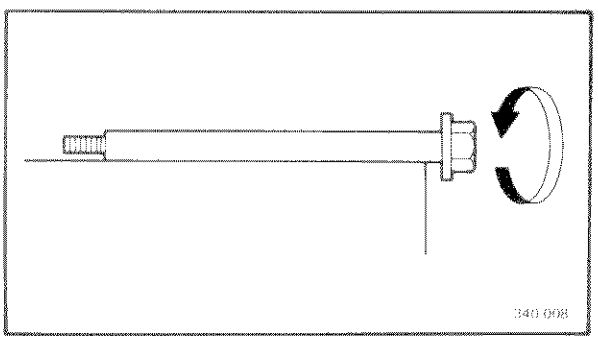










REMOVAL

1. Remove:
   - Side cowlings (left and right)
     Refer to "COWLINGS/COVERS REMOVAL AND INSTALLATION" section in the CHAPTER 3.
2. Place the motorcycle on a level place.

⚠ WARNING:

Securely support the motorcycle so there is no danger of it falling over.

3. Remove:
   - Speedometer cable ①
4. Remove:
   - Bolts (caliper – left)
5. Loosen:
   - Pinch bolt (front axle) ①
   - Axle (front) ②
6. Elevate the front wheel by placing a suitable stand under the engine.
7. Remove:
   - Axle ①
   - Wheel (front)
   - Speedometer gear unit
   - Collar

NOTE:

Do not squeeze the brake lever while the wheel is off the motorcycle.

INSPECTION

1. Inspect:
   - Tire
     Tire tread shows crosswise lines (minimum tread depth)/Cracks → Repalce.

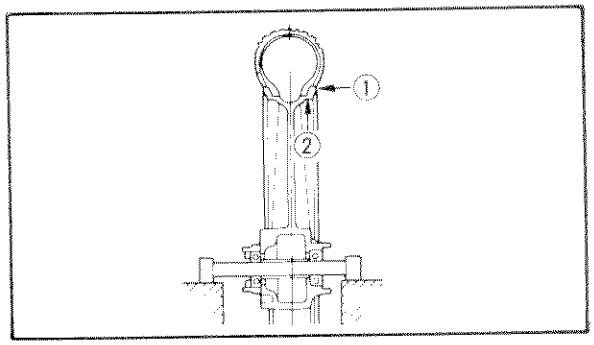
Minimum tire tread depth:
1.0 mm (0.04 in)

① Tread depth ② Side wall ③ Wear indicator

2. Inspect:
   - Front axle
     Bends → Replace.
     Roll the axle on a flat surface.

⚠ WARNING:

Do not attempt to straighten a dent axle.



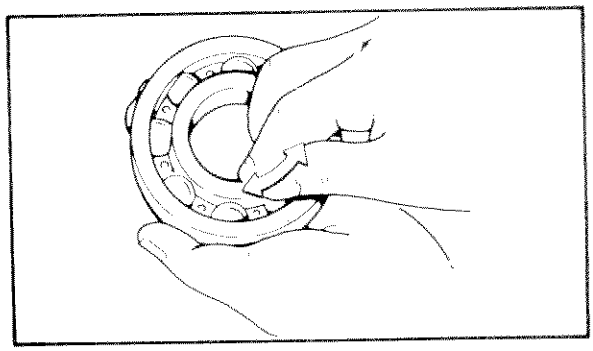
3. Inspect:
   - Wheel
     Cracks/Bends/Warpage → Replace.
4. Measure:
   - Wheel runout
     Over specified limit → Repalce.

Rim runout limit:
Radial ① : 2.0 mm (0.08 in)
Lateral ② : 2.0 mm (0.08 in)

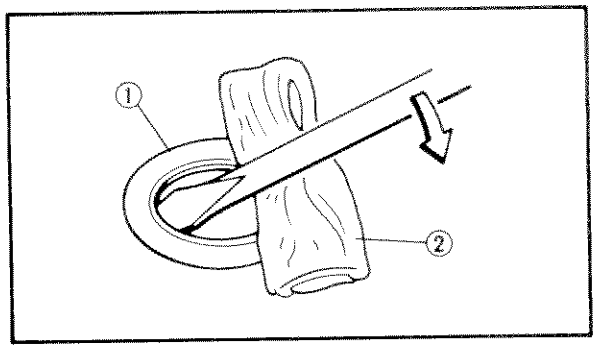
⚠ WARNING:

- **After mounting a tire, ride conservatively to allow proper tire to rim seating. Failure to do so may cause an accident resulting in motorcycle damage and possible operator injury.**
- **After a tire repair or replacement, be sure to torque tighten the valve stem locknut ① to specification.**

Valve-stem locknut:
1.5 Nm (0.15 m · kg, 1.1 ft · lb)

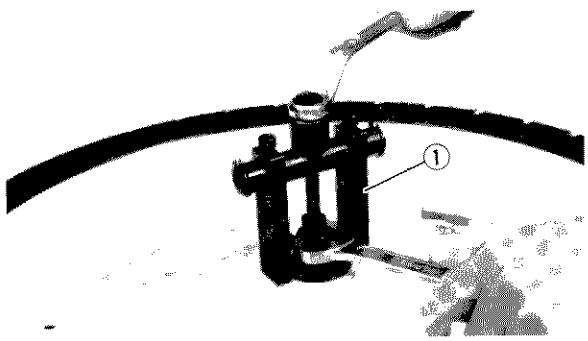


5. Inspect:
   - Wheel bearings
     Bearings allow play in the wheel hub or wheel turns roughly → Replace.

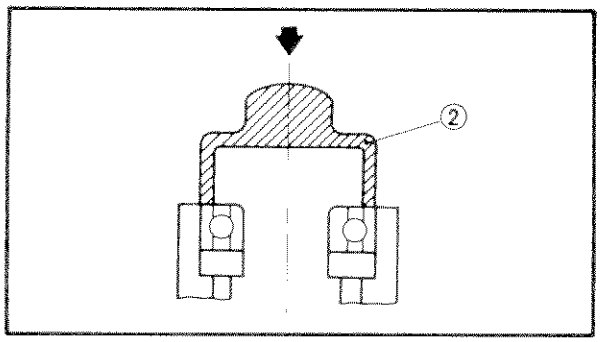


Wheel bearing and oil seal replacement steps:
- Clean the outside of the wheel hub.
- Remove the oil seals ① use a flat-head screw driver.

NOTE:
Place a rag ② on the outer edge to protect this edge.



- Clean the outside of the wheel hub.
- Remove the bearing using a general bearing puller ① .
- Install the new bearing by reversing the previous steps.



NOTE:
Use a socket ② that matches the outside diameter of the race of the bearing.

⚠ **CAUTION:**

Do not strike the center race or balls of the bearing. Contact should be made only with the outer race.

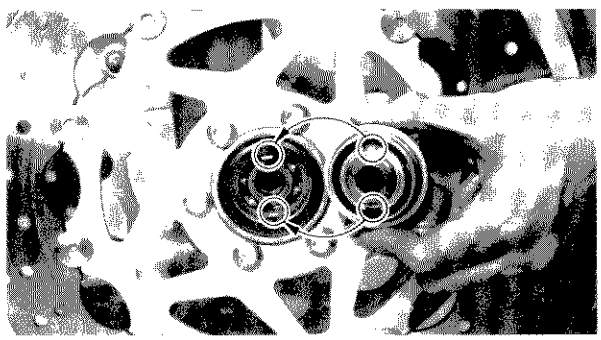
- Install the oil seal (new).

INSTALLATION

When installing the front wheel, reverse the removal procedure. Note the following points.

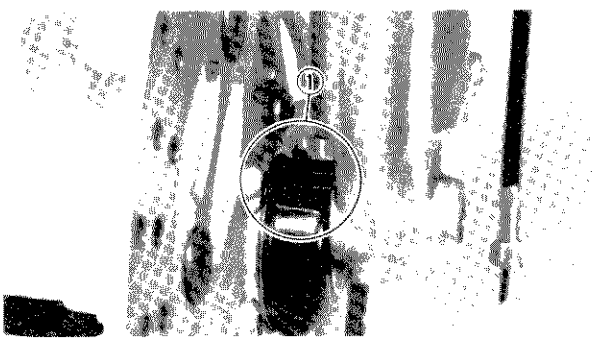
1. Lublicate:
   - Bearings
   - Oil seals

Lithium soap base grease



2. Install:
   - Speedometer gear unit

NOTE:
Be sure that the two projections inside the wheel hub mesh with the two slots in the gear unit assembly.

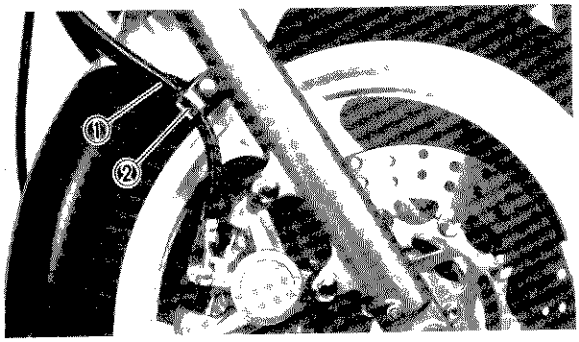


3. Install:
   - Front wheel

NOTE:
Be sure that the projecting portion (torque stopper) ① of the gear unit housing is positioned correctly.

4. Tighten:
   - Front axle
   - Pinch bolt (front axle)
   - Brake calipers (right/left)
   - Speedometer cable

Front axle:
58 Nm (5.8 m · kg, 42 ft · lb)
Pinch bolt (front axle):
20 Nm (2.0 m · kg, 14 ft · lb)
Bolts (brake caliper):
35 Nm (3.5 m · kg, 25 ft · lb)



⚠ WARNING:

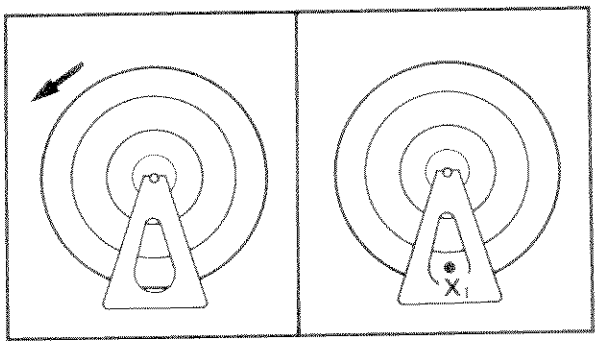
Make sure that the brake hoses are routed properly.

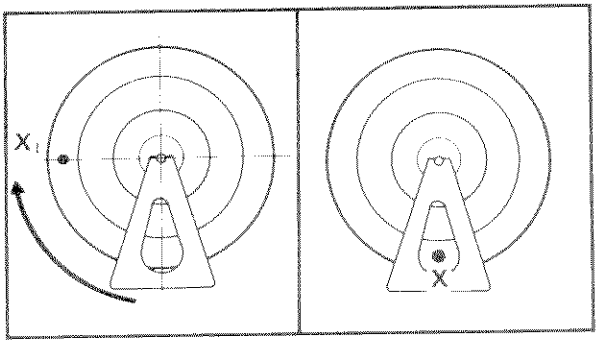
① Brake hose
② Brake hose holder

STATIC WHEEL BALANCE ADJUSTMENT

NOTE:
- After replacing the tire and/or rim, wheel balancer should be adjusted.
- Adjust the wheel balance with brake disk installed.

1. Remove:
   - Balancing weight

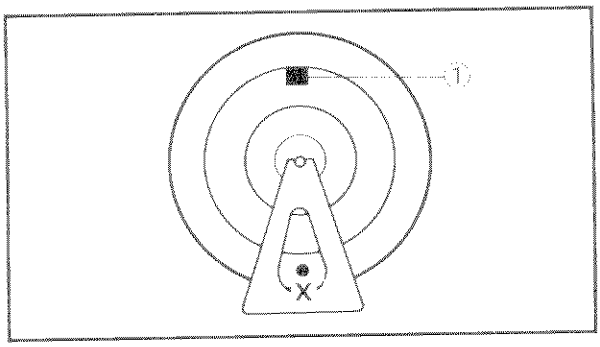




2. Set the wheel on a suitable stand.

3. Find:
   • Heavy spot

Procedure:
a. Spin the wheel and wait for it to rest.
b. Put an "X_1" mark on the wheel bottom spot.
c. Turn the wheel so that the "X_1" mark is 90° up.
d. Let the wheel fall and wait for it to rest. Put an "X_2" mark on the wheel bottom spot.
e. Repeat the above b., c., and d. several times until these marks come to the same spot.
f. This spot is the heavy spot "X".

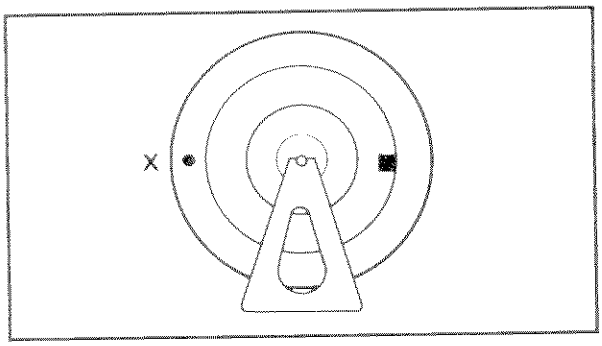


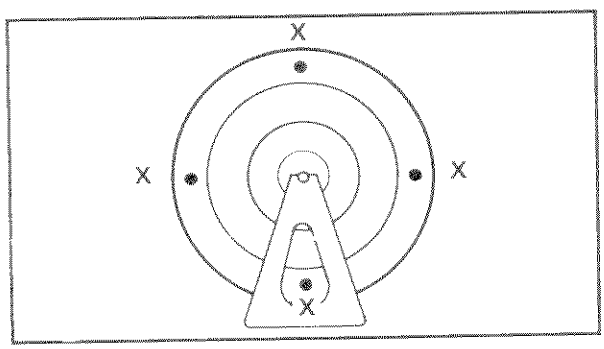
4. Adjust:
   • Wheel balance

Adjusting steps:
• Install a balancing weight (1) on the spoke exactly opposite to the heavy spot "X".

NOTE:
Start with the smallest weight.

• Turn the wheel so that the heavy spot is 90° up.
• Check that the heavy spot is at rest there. If not, try another weight until the wheel is balanced.



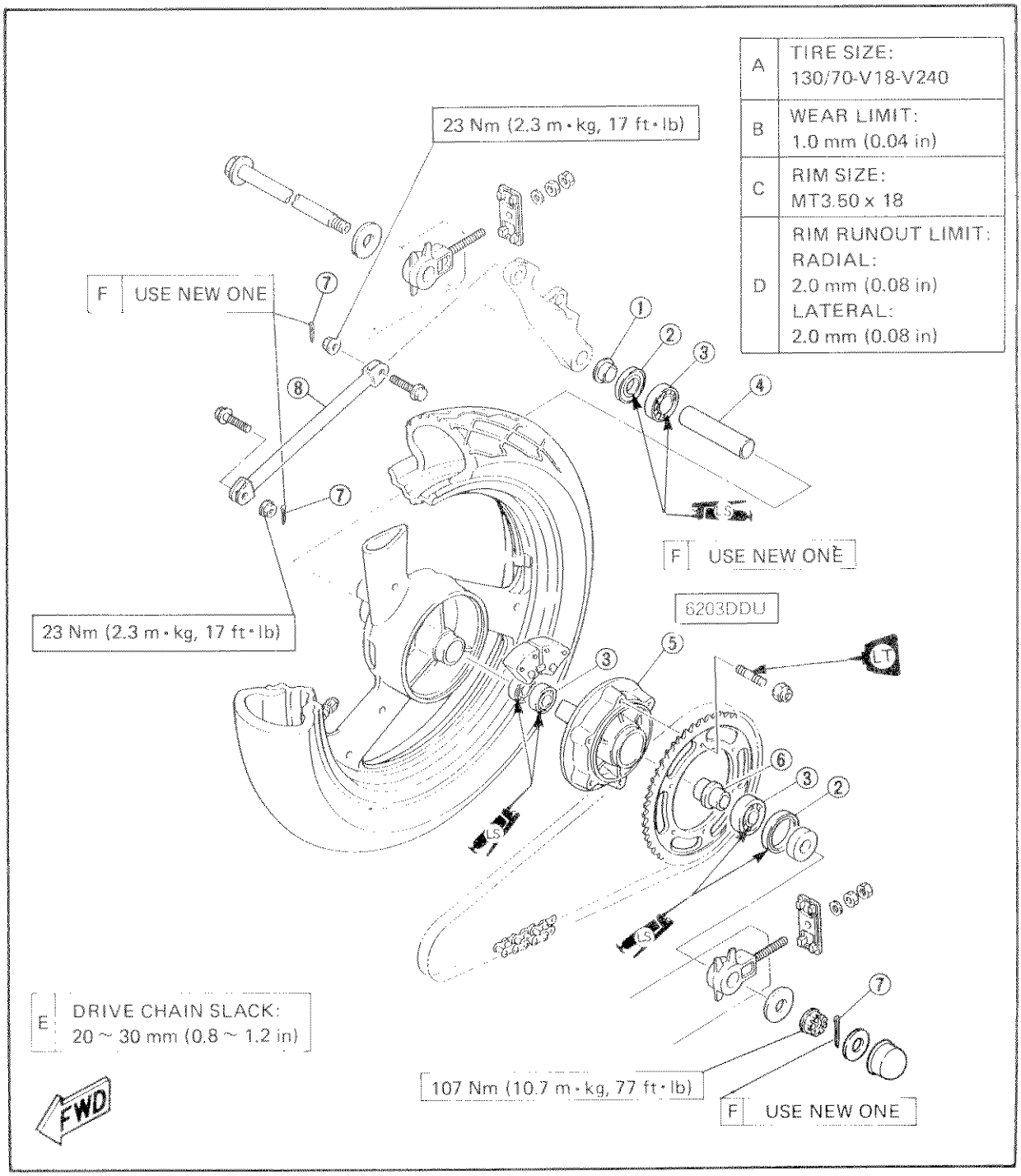


5. Check:
   • Wheel balance

Checking steps:
• Turn the wheel so that it comes to each point as shown.
• Check that the wheel is at rest at each point. If not, readjust the wheel balance.

REAR WHEEL

① Collar
② Oil seal
③ Bearing
④ Spacer
⑤ Clutch hub
⑥ Collar
⑦ Cotter pin
⑧ Tension bar



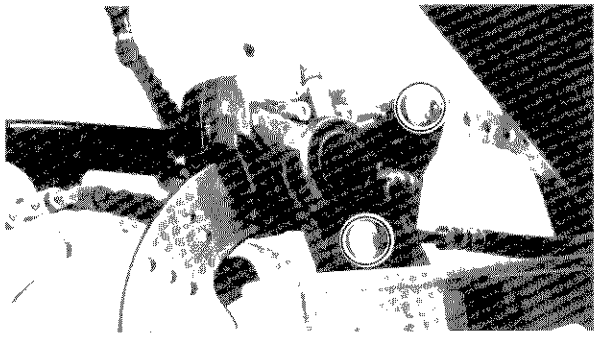
REMOVAL

1. Place the motorcycle on a level place.

⚠ WARNING:

Securely support the motorcycle so there is no danger of it falling over.

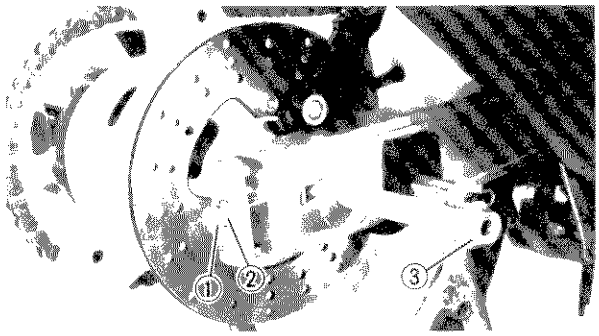
2. Elevate the rear wheel by placing a suitable stand under the swingarm.



3. Remove:
   - Brake caliper

NOTE:

Do not depress the brake pedal while the caliper is off the disc.



4. Loosen:
   - Locknut ①
   - Adjuster ②
5. Remove:
   - Cotter pin
   - Axle nut
   - Axle ③
   - Rear wheel
   - Collars

INSPECTION

1. Inspect:
   - Tire
   - Rear wheel axle
   - Wheel
   - Wheel bearings
   - Oil seals
   - Brake disc

   Refer to the "FRONT WHEEL – INSPECTION".
2. Measure:
   - Wheel runout

   Refer to the "FRONT WHEEL – INSPECTION".

INSTALLATION

When installing the rear wheel, reverse the removal procedure. Note the following points.

1. Lubricate:
   - Bearings
   - Oil seals
   - Spacer
   - Collar

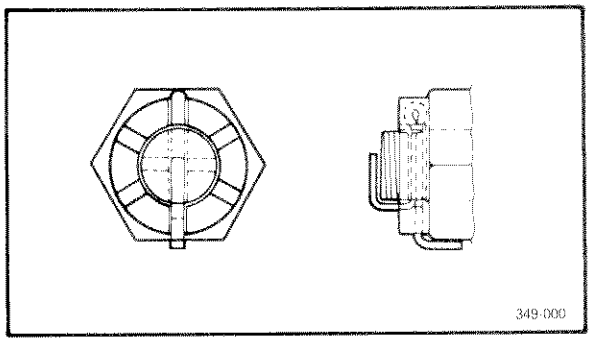
Lithium — soap base grease

2. Adjust:
   - Drive chain slack

Drive chain slack:
20 ~ 30 mm (0.8 ~ 1.2 in)

Refer to the "DRIVE CHAIN ADJUSTMENT" section in the CHAPTER 3.

3. Tighten:
   - Nut (rear axle)
   - Brake caliper



Nut (rear axle):
107 Nm (10.7 m · kg, 77 ft · lb)
Bolts (brake caliper):
35 Nm (3.5 m · kg, 25 ft · lb)

NOTE:

Do not loosen the axle nut after torque tightening.

If the axle nut groove is not aligned with the wheel shaft cotter pin hole, align groove to hole by tightening up on the axle nut.

STATIC WHEEL BALANCE ADJUSTMENT

NOTE:

- After replacing the tire and/or rim, wheel balance should be adjusted.
- Adjust the wheel balance with brake disc and wheel hub installed.

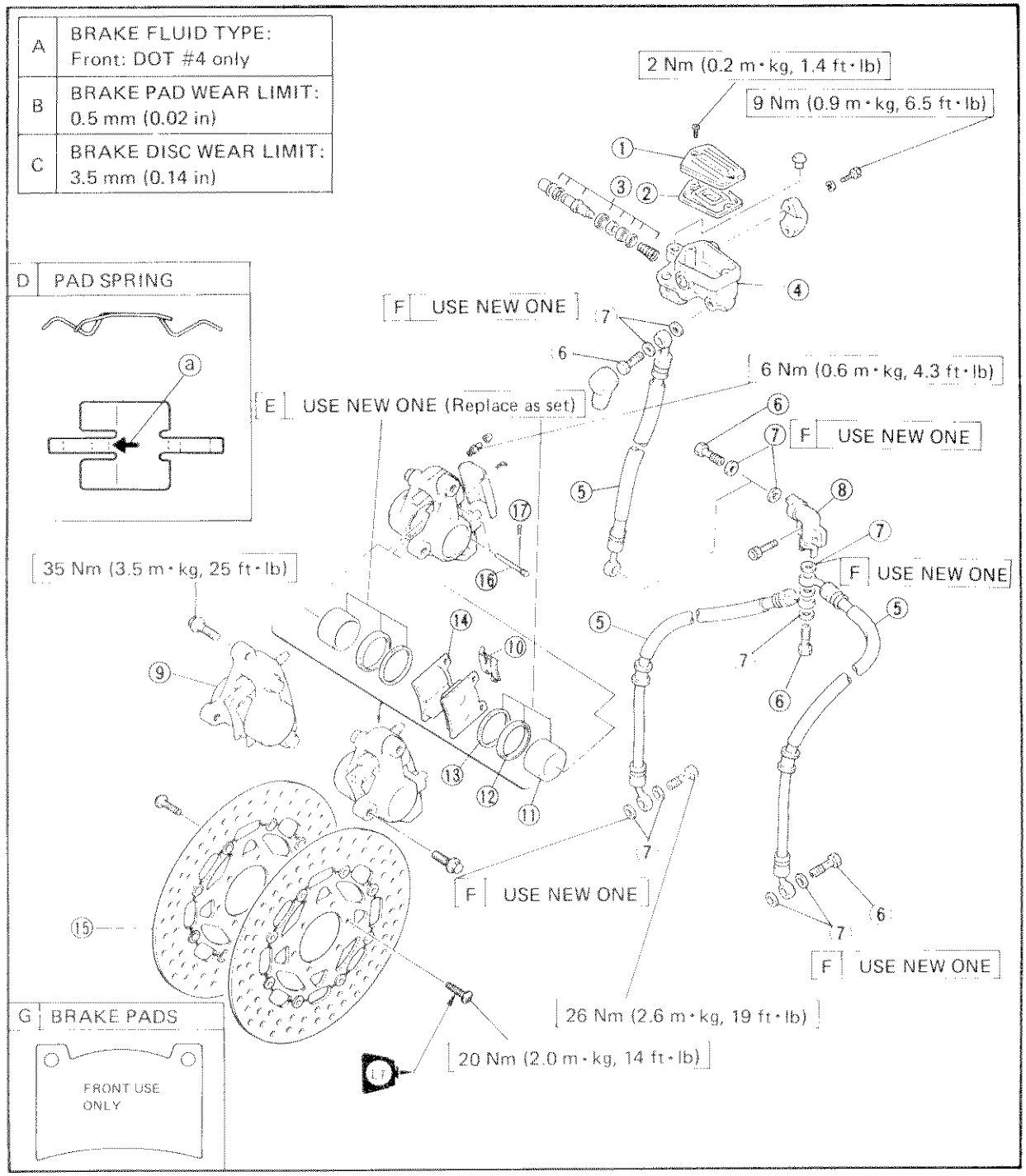
1. Adjust:
   - Wheel balance

   Refer to the "FRONT WHEEL — STATIC WHEEL BALANCE ADJUSTMENT" section.

FRONT AND REAR BRAKE

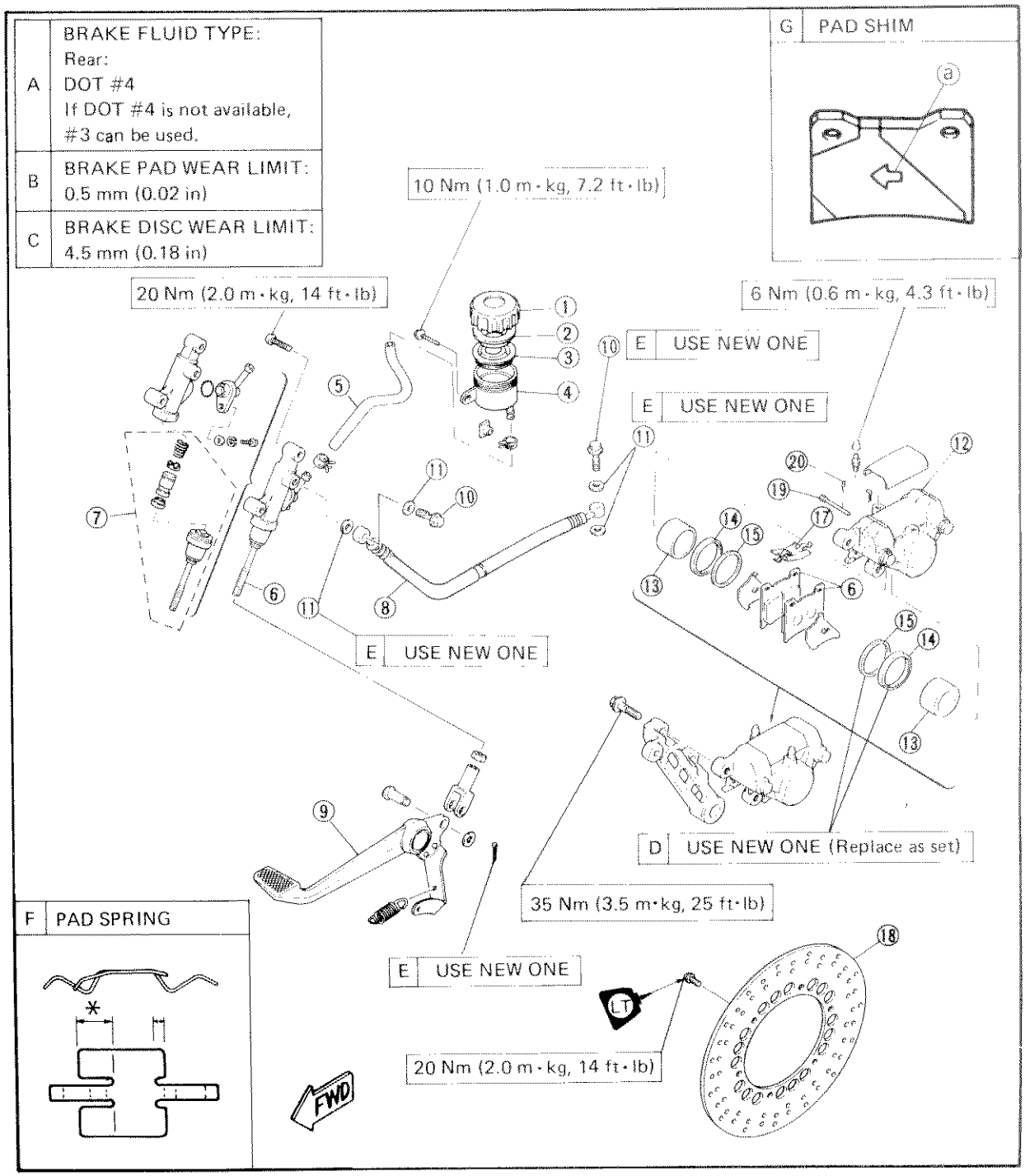
① Master cylinder cap
② Rubber seal
③ Master cylinder kit
④ Master cylinder
⑤ Brake hose
⑥ Union bolt
⑦ Copper washer
⑧ Joint
⑨ Brake caliper
⑩ Pad spring
⑪ Piston
⑫ Piston seal
⑬ Dust seal
⑭ Brake pad
⑮ Brake disc
⑯ Retaining pins
⑰ Retaining clips

D The arrow mark ⓐ on the pad spring must pointing the disc rotating direction.
G The brake pads with "FRONT USE ONLY" mark should be used for front brake only.



① Reservoir tank cap
② Bush
③ Diaphragm
④ Reservoir tank
⑤ Reservoir hose
⑥ Master cylinder
⑦ Master cylinder kit
⑧ Brake hose
⑨ Brake pedal
⑩ Union bolt
⑪ Copper washer
⑫ Brake caliper
⑬ Piston
⑭ Piston seal
⑮ Dust seal
⑯ Brake pad
⑰ Pad spring
⑱ Brake disc
⑲ Retaining pins
⑳ Retaining clips

[F] The longer tangs (✳) of the pad spring must point in the disc rotating direction.
[G] The allow mark ⓐ on the pad shim must point in the disc rotating direction.



⚠ CAUTION:

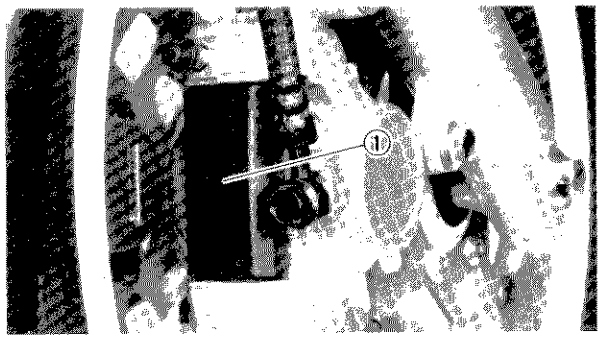
Disc brake components rarely require disassembly. DO NOT:

- Disassembly components unless absolutely necessary.
- Use solvents on internal brake component.
- Use contaminated brake fluid for cleaning.
- Use only clean brake fluid.
- Allow brake fluid to come in contact with the eyes otherwise eye injury may occur.
- Allow brake fluid to contact painted surfaces or plastic parts otherwise damage may occur.
- Disconnect any hydraulic connection otherwise the entire system must be disassembled, drained, cleaned, and then properly filled and bled after reassembly.

BRAKE PAD REPLACEMENT

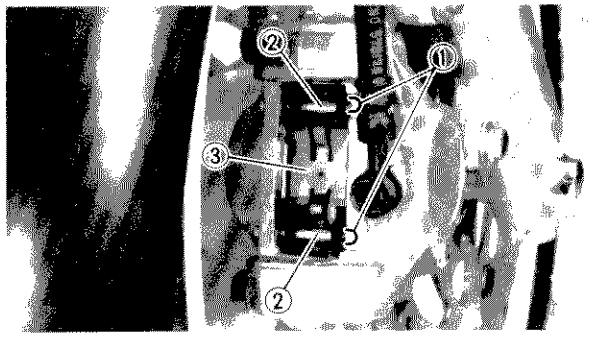
NOTE:

It is not necessary to disassemble the brake caliper and brake hose to replace the brake pads.

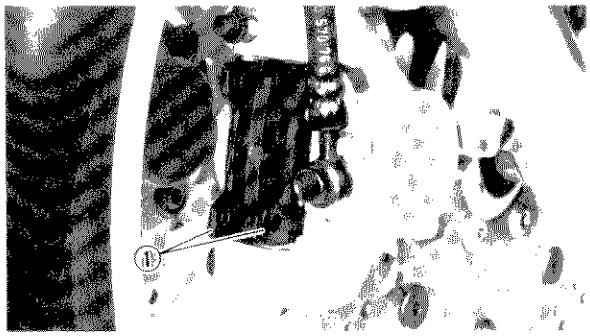


Front Brake

1. Remove:
   - Cover ①



2. Remove:
   - Retaining clips ①
   - Retaining pins ②
   - Pad spring ③

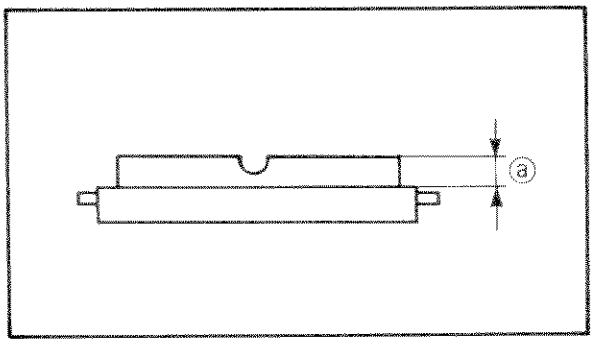


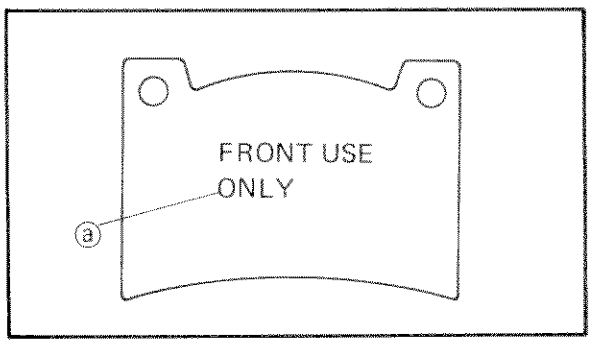
3. Remove:
   • Brake pads ①

NOTE:
- Replace the pad spring if the pad replacement is required.
- Replace the pads as a set if either is found to be worn to the wear limit.

Wear limit ⓐ:
0.5 mm (0.02 in)

- Replace the pad shim if the pad replacement is required for the rear brake.



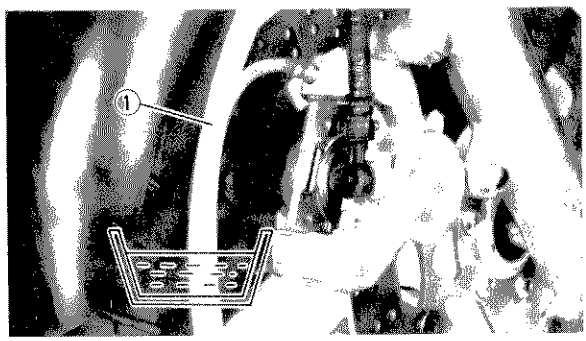


4. Install:
   • Brake pads (new)
   • Pad springs

NOTE:
The brake pads with "FRONT USE ONLY" mark ⓐ should be used for front brake only.

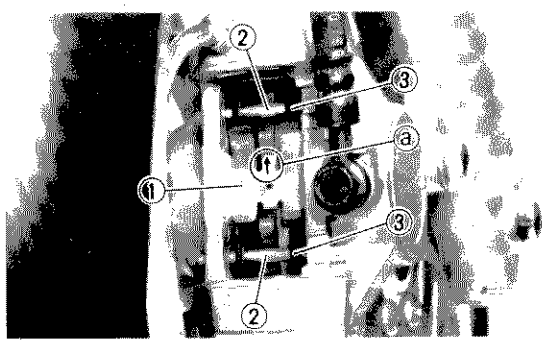
Installation steps:
- Connect a suitable hose ① tightly to the caliper bleed screw. Then, place the other end of this hose into an open container.
- Loosen the caliper bleed screw and push the piston into the caliper by your finger.
- Tighten the caliper bleed screw.

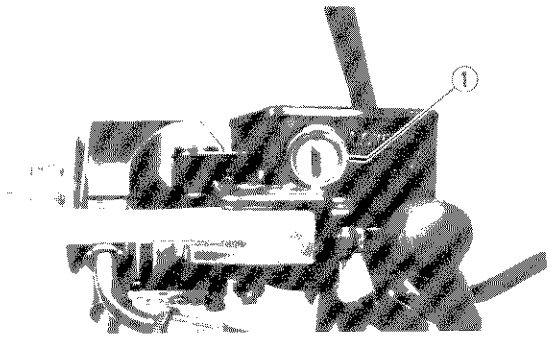
Caliper bleed screw:
6 Nm (0.6 m · kg, 4.3 ft · lb)



- Install the brake pad (new), pad spring (new) ① , retaining pins ② , retaining clip ③ and cover.

NOTE:
The arrow mark ⓐ on the pad spring must point in the disc rotating direction.





5. Inspect:
   - Brake fluid level

   Refer to the "BRAKE AND CLUTCH FLUID INSPECTION" section in the CHAPTER 3.

① "LOWER" level line

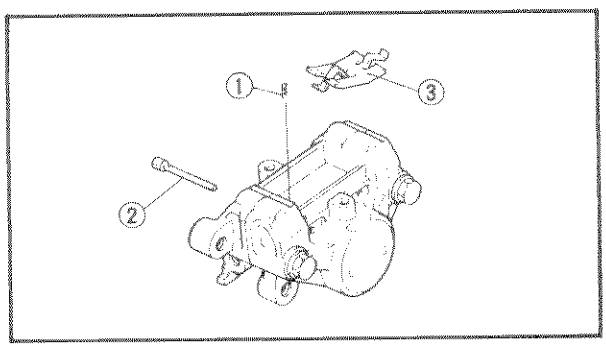
6. Check:
   - Brake lever operation

   A softy or spongy filling → Bleed brake system.

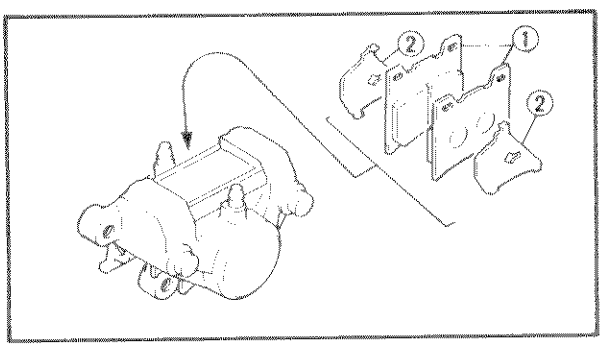
   Refer to the "AIR BLEEDING" section.

Rear Brake

1. Remove:
   - Cover

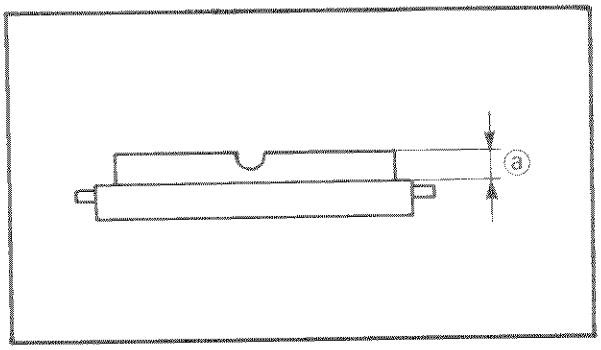


2. Remove:
   - Retaining clips ①
   - Retaining clips ②
   - Pad spring ③



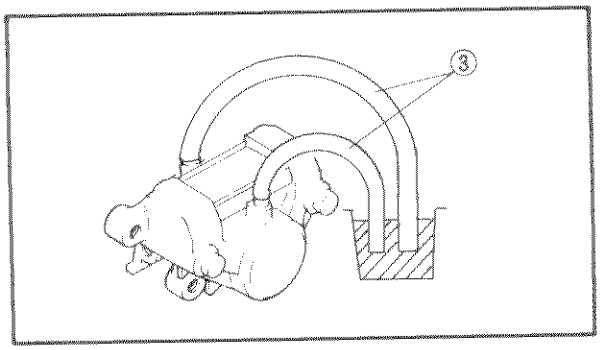
3. Remove:
   - Brake pads ①
   - Pad shim ②

NOTE:
- Replace the pad spring if the pad replacement is required.
- Replace the pads as a set if either is found to be worn to the wear limit.



Wear limit ⓐ:
0.5 mm (0.02 in)

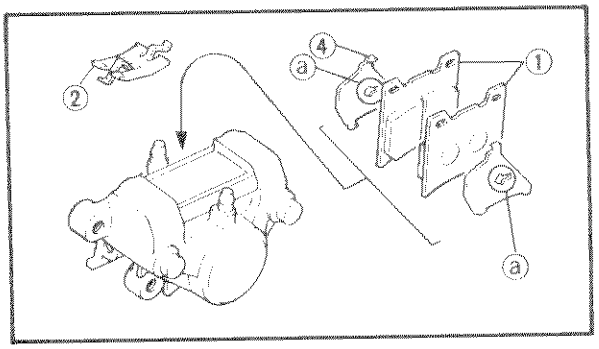
- Replace the pad shim if the pad replacement is required for the rear brake.



4. Install:
   - Brake pads ①
   - Pad springs ②

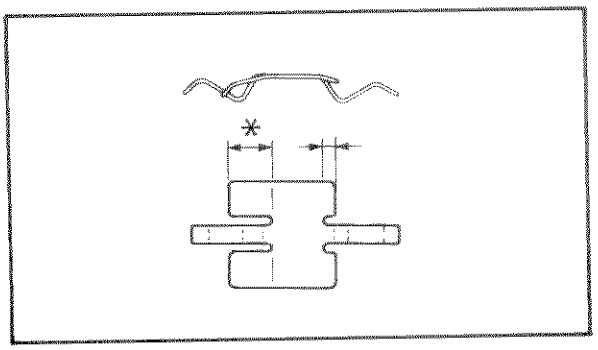
Installation steps:
- Connect a suitable hose ③ tightly to the caliper bleed screw. Then, place the other end of this hose into an open container.
- Loosen the caliper bleed screw and push the piston into the caliper by your finger.
- Tighten the caliper bleed screw.

Caliper bleed screw:
6 Nm (0.6 m · kg, 4.3 ft · lb)



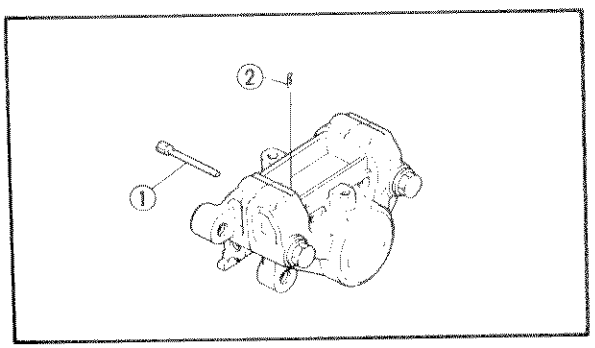
- Install the pad shim (new) ④ to the brake pad (new).

NOTE:
The arrow mark ⓐ on the pad shim must point in the disc rotating direction.

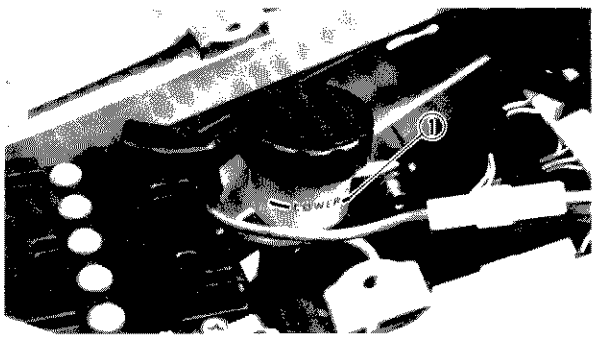


- Install the brake pad (new) and pad spring (new) ②.

NOTE:
The longer tangs (*) of the pad spring must point in the disc rotating direction.



5. Install:
   - Retaining pins ①
   - Retaining clips ②
   - Cover
6. Remove:
   - Seat (front)



7. Inspect:
   - Brake fluid level
     Refer to the "BRAKE AND CLUTCH FLUID INSPECTION" section in the CHAPTER 3.

① "LOWER" level line

8. Check:
   - Brake pedal operation
     A softy or spongy filling → Bleed brake system.
     Refer to the "AIR BLEEDING" section.
9. Install:
   - Seat (front)
     Refer to the "COWLINGS" section in the CHAPTER 3.

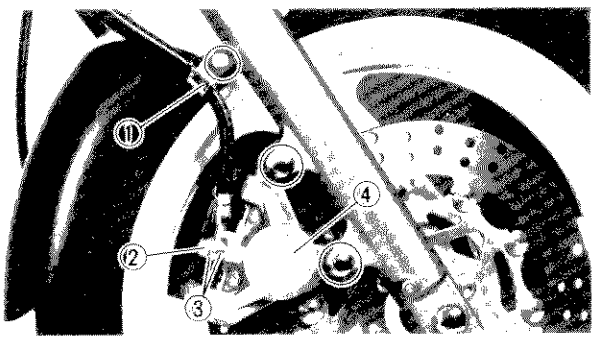
CALIPER DISASSEMBLY

NOTE:

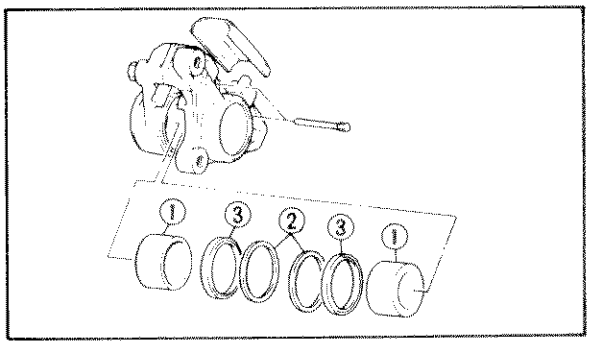
Before disassembling the front brake caliper or rear brake caliper, drain the brake hose, master cylinder, brake caliper and reservoir tank of their brake fluid.

Front Brake

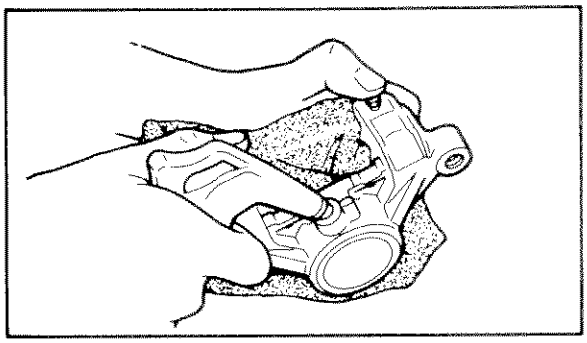
1. Remove:
   - Cover
   - Retaining clips
   - Retaining pins
   - Pad spring
   - Brake pads
     Refer to the "BRAKE PAD REPLACEMENT" section.



2. Remove:
   - Clamp ①
   - Union bolt ②
   - Copper washers ③
   - Caliper ④



3. Remove:
   - Pistons ①
   - Dust seals ②
   - Piston seals ③

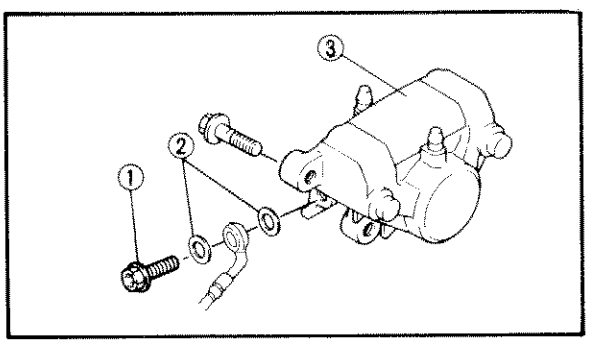


Remove steps:
- Blow compressed air into the tube joint opening to force out the piston from the caliper body.

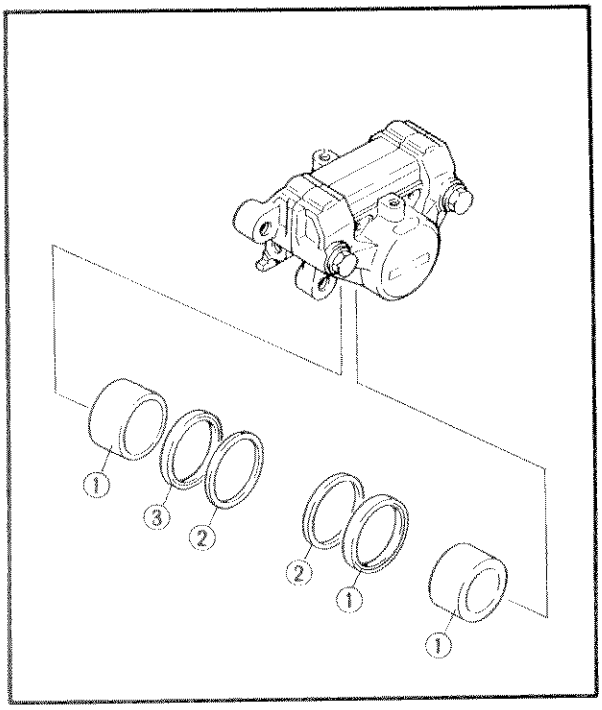
⚠ WARNING:
- **Never try to pry out the piston.**
- **Cover the piston with a rag. Use care so that piston does not cause injury as it is expelled from the cylinder.**

Rear Brake

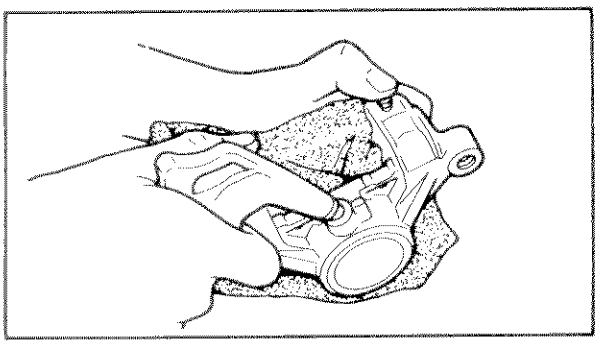
1. Remove:
   - Cover
   - Retaining clips
   - Retaining pins
   - Pad spring
   - Brake pads (with shims)
     Refer to the "BRAKE PAD REPLACEMENT" section.



2. Remove:
   - Union bolt ①
   - Copper washers ②
   - Caliper ③

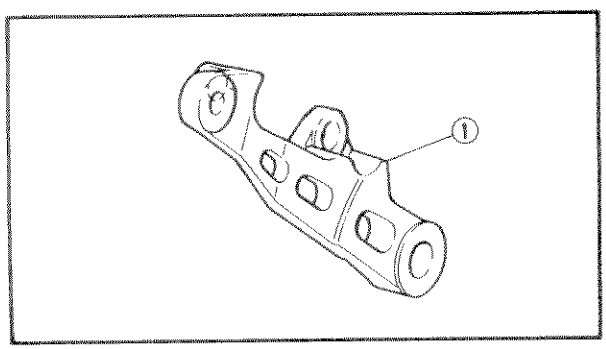


3. Remove:
   - Pistons ①
   - Dust seals ②
   - Piston seals ③



Removal steps:
- Blow compressed air into the tube joint opening to force out the piston from the caliper body.

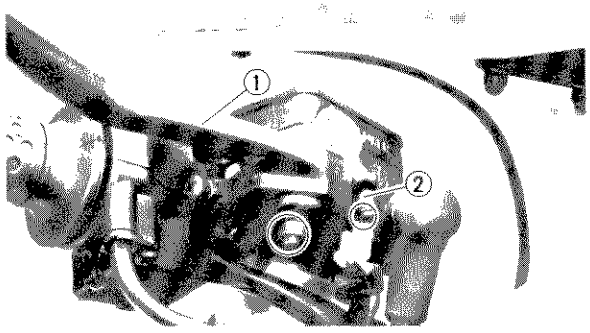
⚠ WARNING:
- **Never try to pry out the piston.**
- **Cover the piston with a rag. Use care so that piston does not cause injury as it is expelled from the cylinder.**



4. Remove:
   - Rear wheel
     Refer to "REAR WHEEL" section.
   - Cotter pin
   - Caliper bracket ①

MASTER CYLINDER DISASSEMBLY

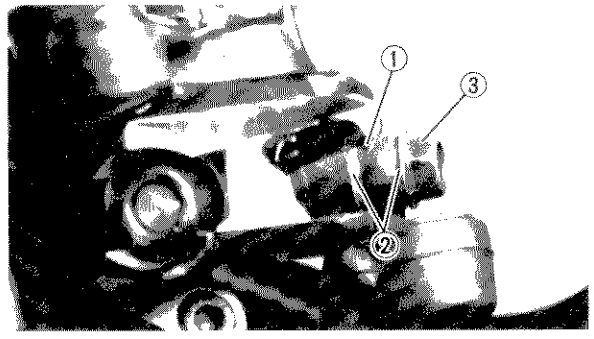
NOTE:
Before disassembling the front or rear brake master cylinders, drain the brake hose, master cylinder, brake caliper and reservoir tank of their brake fluid.



Front Brake

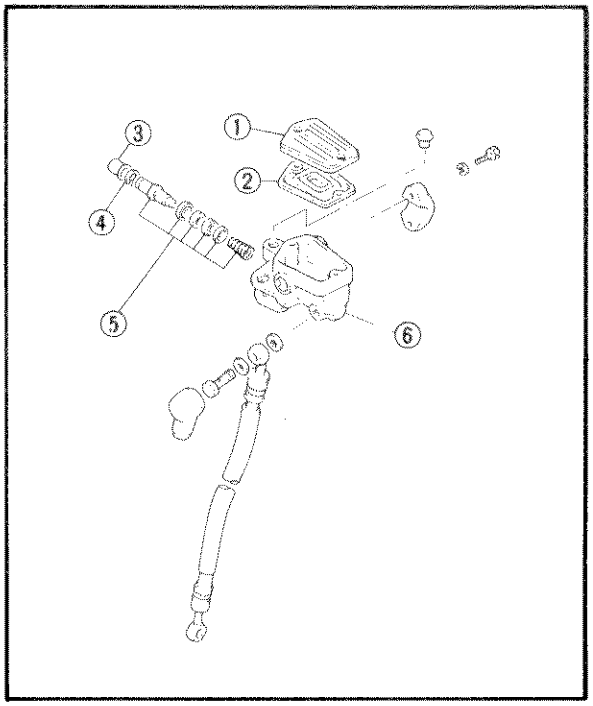
1. Remove:
   - Brake switch ①
   - Brake lever ②
   - Return spring (brake lever)

NOTE:
Disconnect the brake switch from the brake lever while pushing the hook of brake switch by a suitable rod.

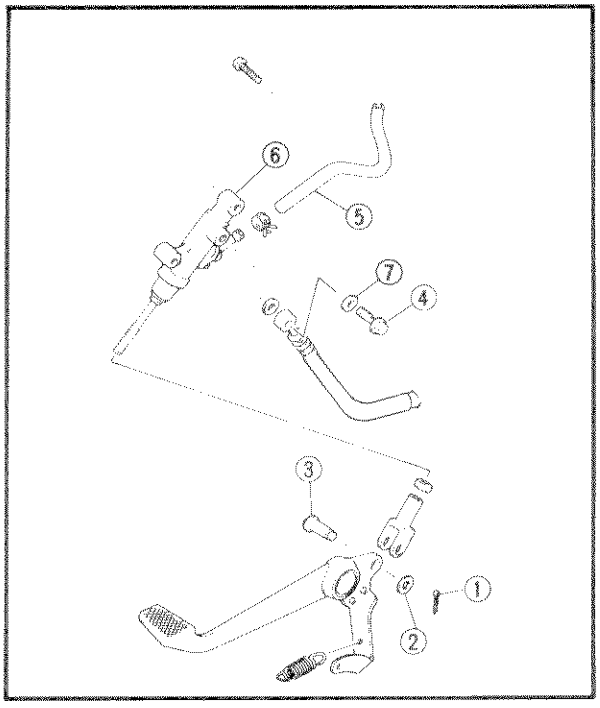


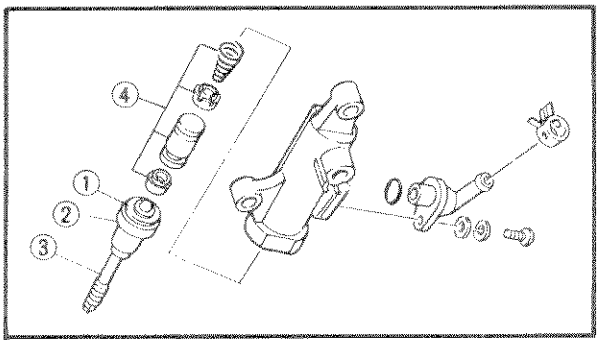
2. Remove:
   - Brake hose ①
   - Copper washers ②
   - Union bolt ③

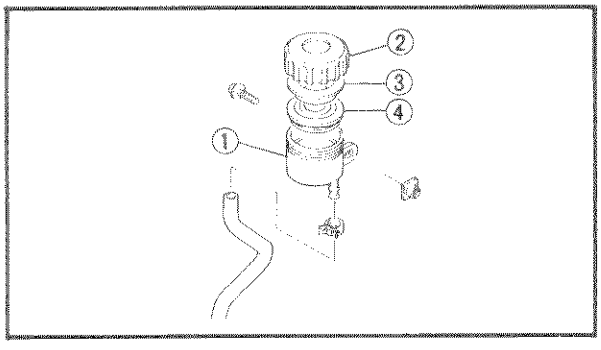
NOTE:
Place the open hose end into a container.



3. Remove:
   - Cap (master cylinder)
   - Diaphragm ③
   - Dust boot ④
   - Circlip ⑤
   - Master cylinder kit ⑥
4. Remove:
   - Master cylinder ⑥







Rear Brake

1. Remove:
   - Seat
   - Side cover (right)

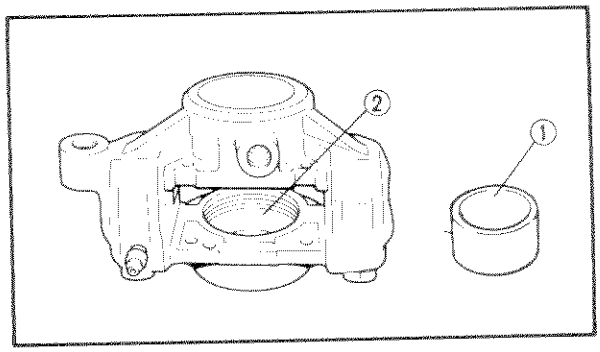
   Refer to the "COWLINGS REMOVAL AND INSTALLATION" section in the CHAPTER 3.
2. Remove:
   - Cotter pin ①
   - Washer ②
   - Clevis pin ③
3. Loosen:
   - Union bolt ④
4. Disconnect:
   - Brake hose (reservoir tank — master cylinder) ⑤
5. Remove:
   - Master cylinder ⑥
   - Union bolt ④
   - Copper washers ⑦
6. Remove:
   - Dust boot ①
   - Circlip ②
   - Push rod ③
   - Master cylinder kit ④
7. Remove:
   - Reservoir tank ① (from flame)
   - Cap (reservoir tank) ②
   - Holder (diaphragm) ③
   - Diaphragm ④

INSPECTION AND REPAIR

Recommended brake component replacement schedule:	
Brake pads	As required
Piston seal, dust seal	Every two years
Brake hoses	Every four years
Brake fluid	Replace only when brakes are disassembled

⚠WARNING:

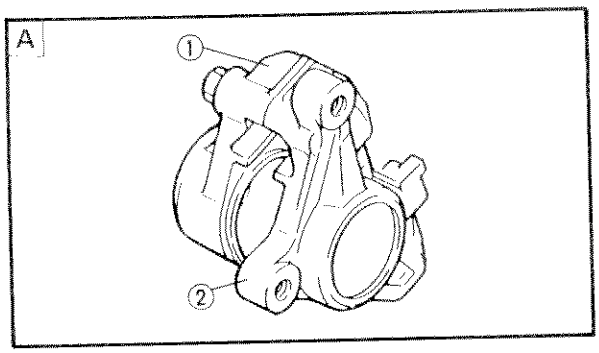
All internal parts should be cleaned in new brake fluid only. Do not use solvents will cause seals to swell and distort.

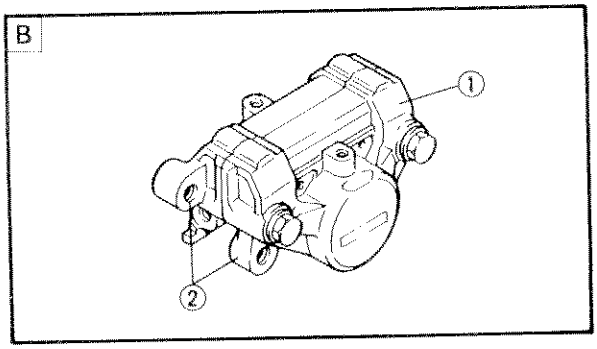


1. Inspect:
   - Caliper piston ①
     Scratches/Rust/Wear → Replace caliper assembly.
   - Caliper cylinder ②
     Wear/Scratches → Replace caliper assembly.

⚠WARNING:

Replace the piston seal and dust seal whenever a caliper is disassembled.





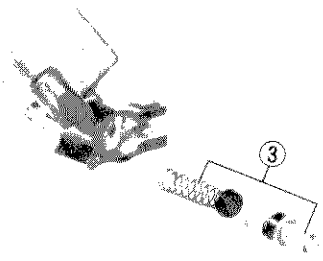
2. Inspect:
   - Caliper body ①
   - Caliper bracket ②
     Cracks/Damage → Replace.
   - Oil delivery passage (caliper body)
     Blow out with compressed air.

[A] Front
[B] Rear

A B

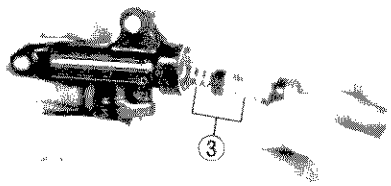
3. Inspect:
- Master cylinder ①
  Wear/Scratches → Replace the caliper assembly.
- Master cylinder body ②
  Cracks/Damage → Replace.
- Oil delivery passage (master cylinder body)
  Blow out with compressed air.

A

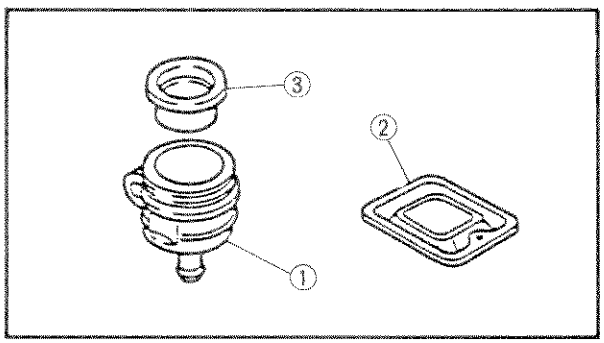


4. Inspect:
- Master cylinder kit ③
  Scratches/Wear/Damage → Replace, as a set.

B

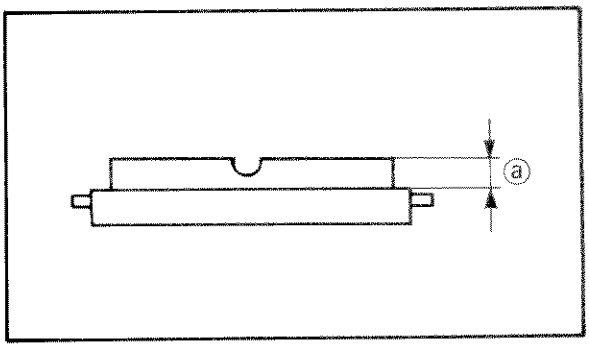


A Front
B Rear



5. Inspect:
- Reservoir tank ①
  Cracks/Damage → Replace.
- Diaphragm (front) ②
- Diaphragm (rear) ③
  Wear/Damage → Replace.

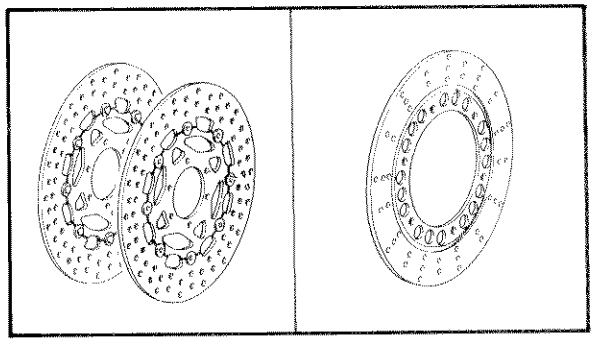
6. Inspect:
- Brake hoses
  Cracks/Wear/Damage → Replace.



7. Measure:
   • Brake pads (thickness) ⓐ
   Out of specification → Replace.

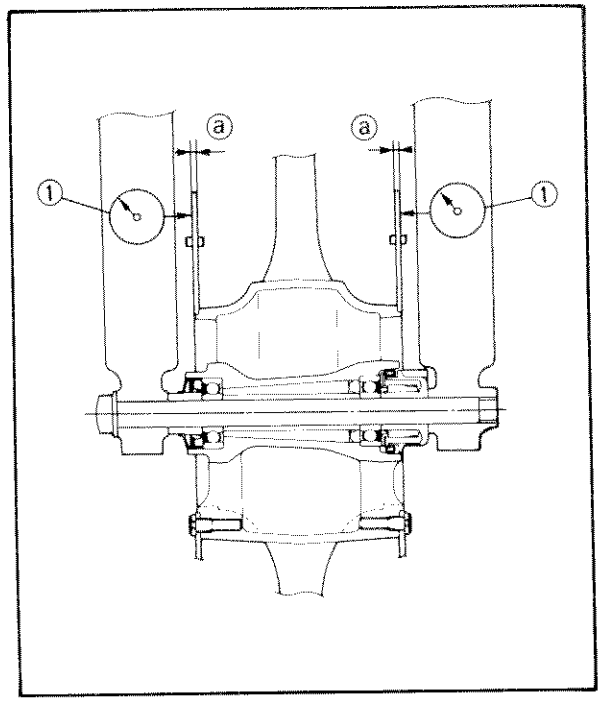
Wear limit:
0.5 mm (0.02 in)

NOTE:
- Replace the pad spring as a set if pad replacement is required.
- Replace the pads as a set if either if found to be worn to the wear limit.



8. Inspect:
   • Brake discs (front and rear)
   Galling/Damage → Replace.
9. Measure:
   • Brake disc deflection
   Out of specification → Inspect wheel runout.
   If wheel runout is in good condition, replace the brake disc(s).

Maximum deflection:
0.5 mm (0.02 in)



   • Brake disc thickness ⓐ
   Out of specification → Replace.

Minimum thickness:
front: 3.5 mm (0.14 in)
rear: 4.5 mm (0.18 in)

① Dial gauge

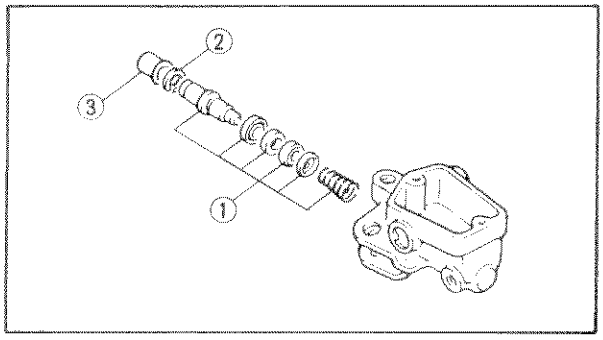
NOTE:
Tighten the bolts (brake disc) in stage using a crisscross pattern.

Bolt (brake disc):
20 Nm (2.0 m·kg, 14 ft·lb)
Use LOCTITE®

ASSEMBLY

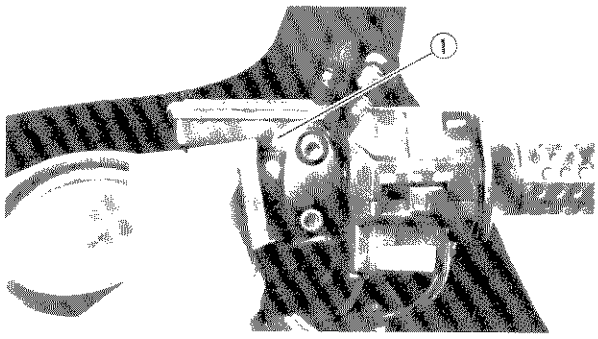
⚠ WARNING:

- All internal parts should be cleaned in new brake fluid only.
- Internal parts should be lubricated with brake fluid when installed.
- Replace the piston seal and dust seal whenever a caliper is disassembled.



Front Brake

1. Install:
   - Master cylinder kit ①
   - Circlip ②
   - Dust boot ③

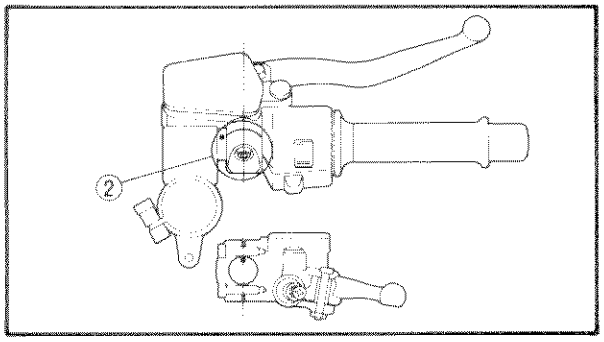


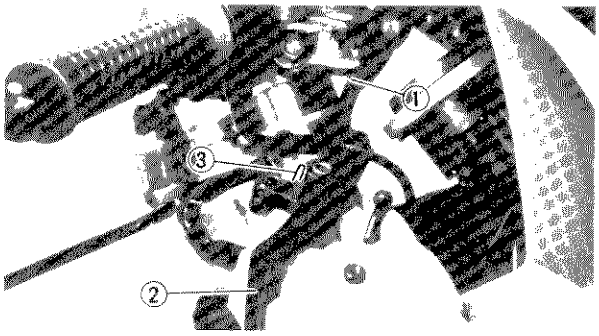
2. Install:
   - Master cylinder ①

⚠ CAUTION:

- Install the master cylinder holder with the "UP" mark facing upward.
- Align the end of the holder with the punch mark ② on the handlebar.
- Tighten first the upper bolt, then the lower bolt.

	Bolts (master cylinder holder): 9 Nm (0.9 m · kg, 8.5 ft · lb)

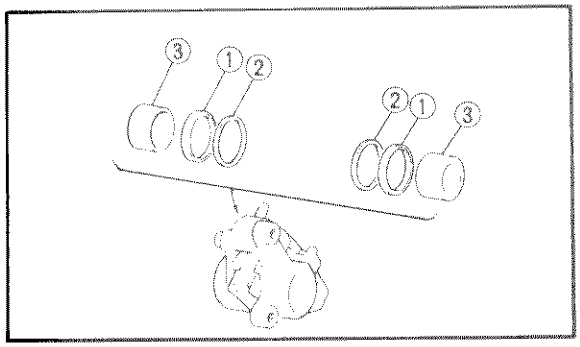




3. Install:
   - Brake switch ①
   - Brake lever ②
   - Return spring (brake lever) ③

NOTE:

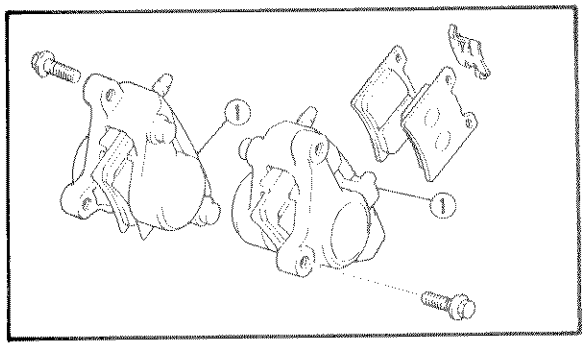
Apply the lithium soap base grease to the brake lever pivot.



4. Install:
   - Piston seal ①
   - Dust seal ②
   - Caliper piston ③

⚠ WARNING:

Always use new piston seal and dust seal.



5. Install:
   - Brake calipers ①

Bolt (brake caliper): 35 Nm (3.5 m · kg, 25 ft · lb)

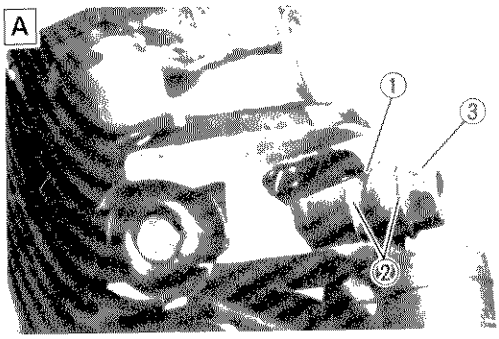
   - Brake pads
   - Pad spring
   - Retaining pins
   - Retaining clips
   - Cover

   Refer to "BRAKE PAD REPLACEMENT" section.

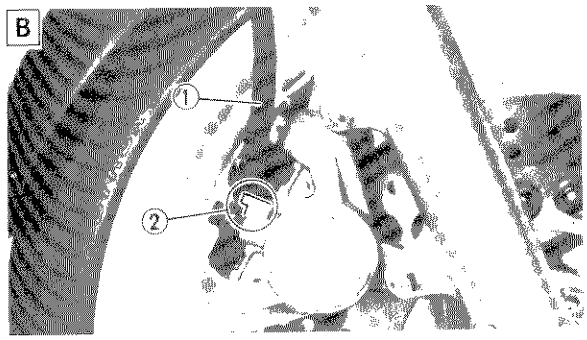
6. Install:
   - Brake hose ①
   - Copper washers ②
   - Union bolt ③

Union bolt: 26 Nm (2.6 m · kg, 19 ft · lb)

A



B



[A] Front
[B] Rear

⚠ CAUTION:

When installing the brake hose to the caliper ① , lightly touch the brake pipe with the projections ② on them.

⚠ WARNING:

- Proper hose routing is essential to insure safe motorcycle operation. Refer to "CABLE ROUTING".
- Always use new copper washers.

7. Fill:
   • Master cylinder tank

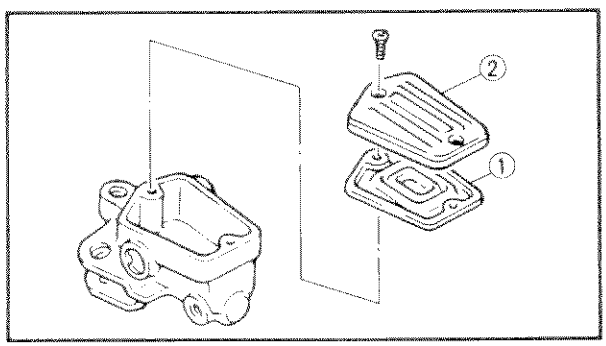
	Recommended brake fluid: **DOT #4 only**

⚠ CAUTION:

Brake fluid may erode painted surfaces or plastic parts. Always clean up spilled fluid immediately.

⚠ WARNING:

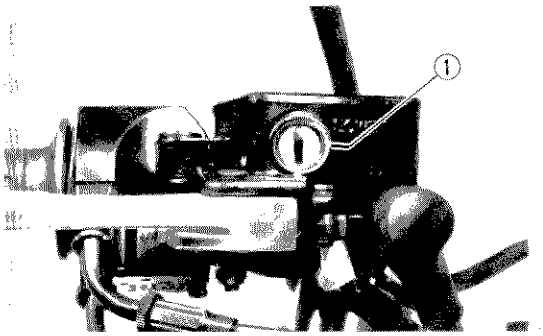
- Use only the designated quality brake fluid. otherwise, the rubber seals may deteriorate, causing leakage and poor brake performance.
- Refill with the same type of brake fluid; mixing fluids may result in a harmful chemical reaction and lead to poor performance.
- Be careful that water does not enter the master cylinder when refilling. Water will significantly lower the boiling point of the fluid and may result in vapor lock.



8. Install:
   • Diaphragm ①
   • Cap (master cylinder) ②

	Screw (master cylinder): **2 Nm (0.2 m · kg, 1.4 ft · lb)**

9. Air bleed:
   • Brake system
   Refer to "AIR BLEEDING" section in the CHAPTER 3.

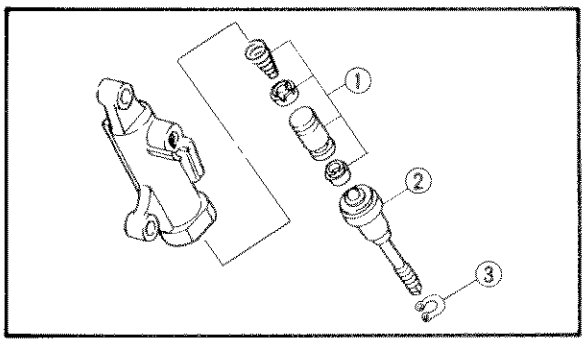


10. Inspect:
    - Brake fluid level
      Refer to "BRAKE FLUID INSPECTION" section in the CHAPTER 3.

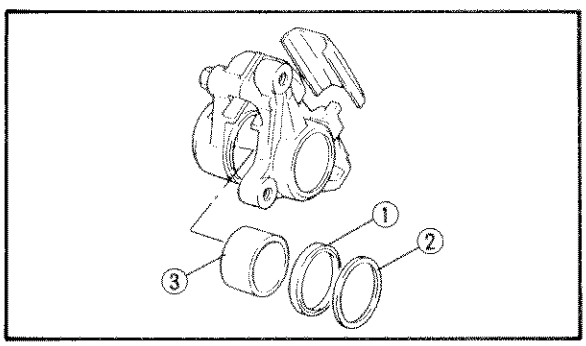
① "LOWER" level line

Rear Brake

1. Install:
   - Master cylinder kit ①
   - Push rod ②
   - Circlip ③

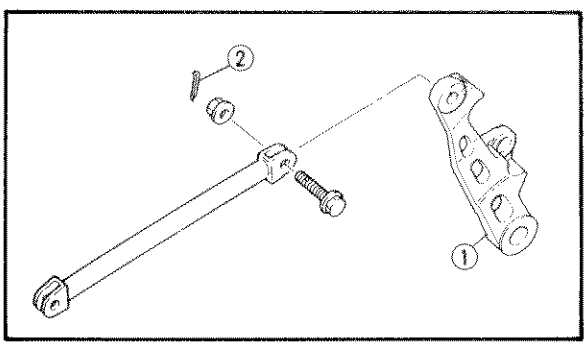


2. Install:
   - Piston seal ①
   - Dust seal ②
   - Pistons ③



⚠ WARNING:

Always use new piston seal and dust seal.



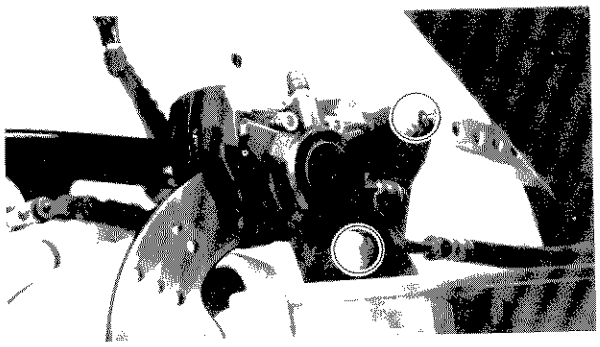
3. Install:
   - Caliper bracket ①
   - Cotter pin ②

⚠ WARNING:

Always use a new cotter pin.

	Nut (tensionbar – caliper bracket): 28 Nm (2.8 m·kg, 20 ft·lb)

4. Install:
   - Rear wheel
     Refer to the "REAR WHEEL" section.

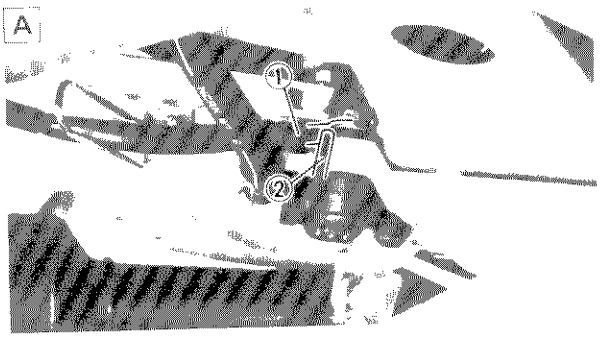


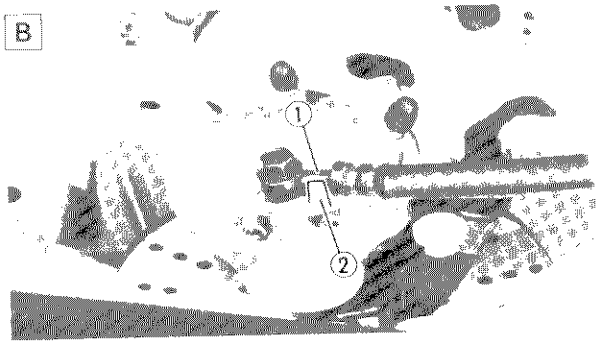
5. Install:
   - Brake caliper (rear)

	Brake caliper (rear): **35 Nm (3.5 m · kg, 25 ft · lb)**

   - Brake pads (with shims)
   - Pad spring
   - Retaining bins
   - Retaining clips
   - Cover

   Refer to "BRAKE PAD REPLACEMENT" section.





6. Install:
   - Copper washers
   - Brake hose
   - Union bolts
   - Master cylinder

	Bolt (master cylinder): **20 Nm (2.0 m · kg, 14 ft · lb)** **Union bolts:** **26 Nm (2.6 m · kg, 19 ft · lb)**

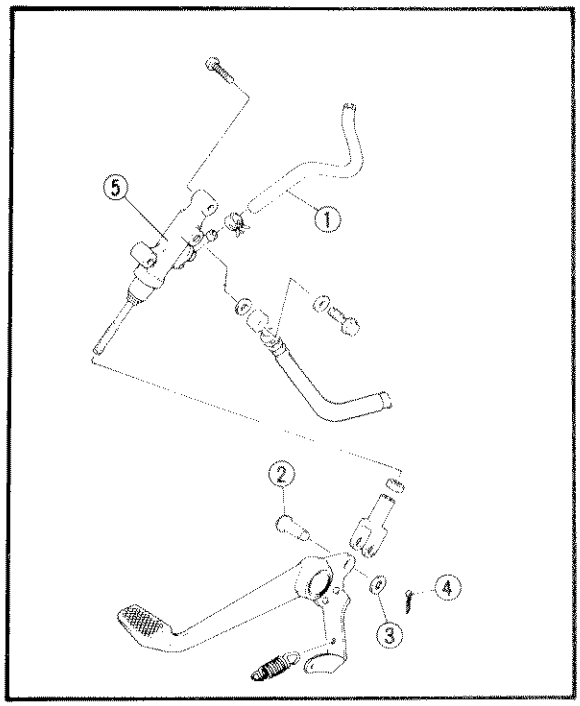
[A] Front
[B] Rear

⚠ CAUTION:

When installing the brake hose, lightly touch the brake pipe ① with the projections ② on the caliper and master cylinder.

⚠ WARNING:

- **Proper hose routing is essential to insure safe machine operation. Refer to "CABLE ROUTING".**
- **Always use new copper washers.**



7. Connect:
   - Brake hose (reservoir tank — master cylinder) ①
8. Install:
   - Clevis pin ②
   - Washer ③
   - Cotter pin ④
   - Master cylinder assembly ⑤

⚠ WARNING:

Always use a new cotter pin.

Bolt (master cylinder):
20 Nm (2.0 m · kg, 14 ft · lb)

9. Fill:
   - Reservoir tank

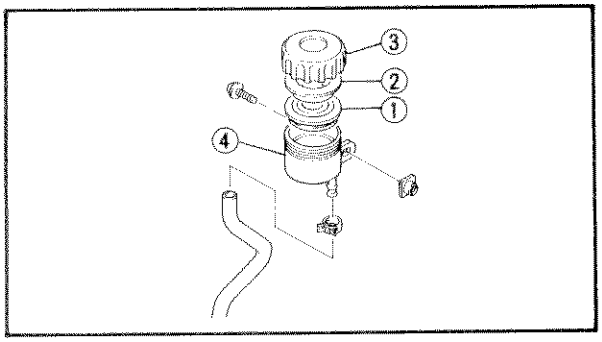
Recommended brake fluid:
DOT #4
If DOT #4 is not available, #3 can be used.

⚠ CAUTION:

Brake fluid may erode painted surfaces or plastic parts. Always clean up spilled fluid immediately.

⚠ WARNING:

- Use only the designated quality brake fluid: otherwise, the rubber seals may deteriorate, causing leakage and poor brake performance.
- Refill with the same type of brake fluid; mixing fluids may result in a harmful chemical reaction and lead to poor performance.
- Be careful that water does not enter the master cylinder when refilling. Water will significantly lower the boiling point of the fluid and may result in vapor lock.



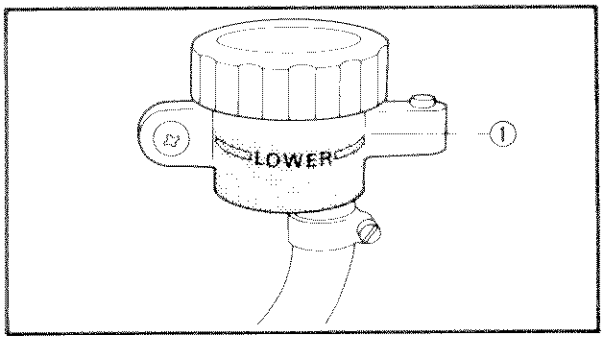
10. Install:
    - Diaphragm ①
    - Holder (diaphragm) ②
    - Cap (reservoir tank) ③
    - Reservoir tank ④

11. Air bleed
    - Brake system

    Refer to "AIR BLEEDING" section in the CHAPTER 3.

12. Install:
    - Side cover (right)
    - Seat

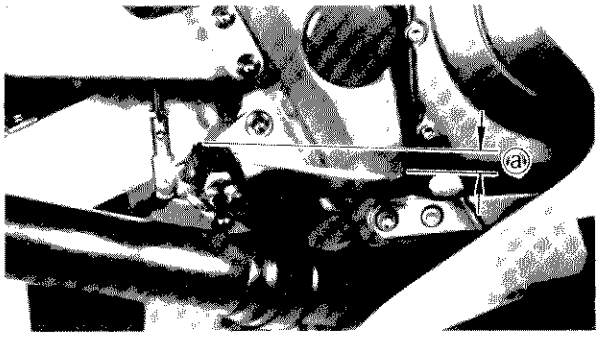
    Refer to "COVERS" section in the CHAPTER 3.



13. Inspect:
    - Brake fluid level

    Refer to the "BRAKE FLUID INSPECTION" section in the CHAPTER 3.

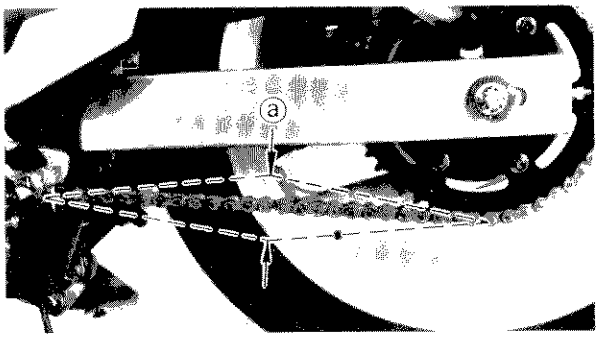
① "LOWER" level line



14. Adjust:
    - Rear brake pedal height ⓐ

Pedal height:
44 mm (1.73 in)
Below top of footrest

Refer to the "REAR BRAKE ADJUSTMENT" section in the CHAPTER 3.



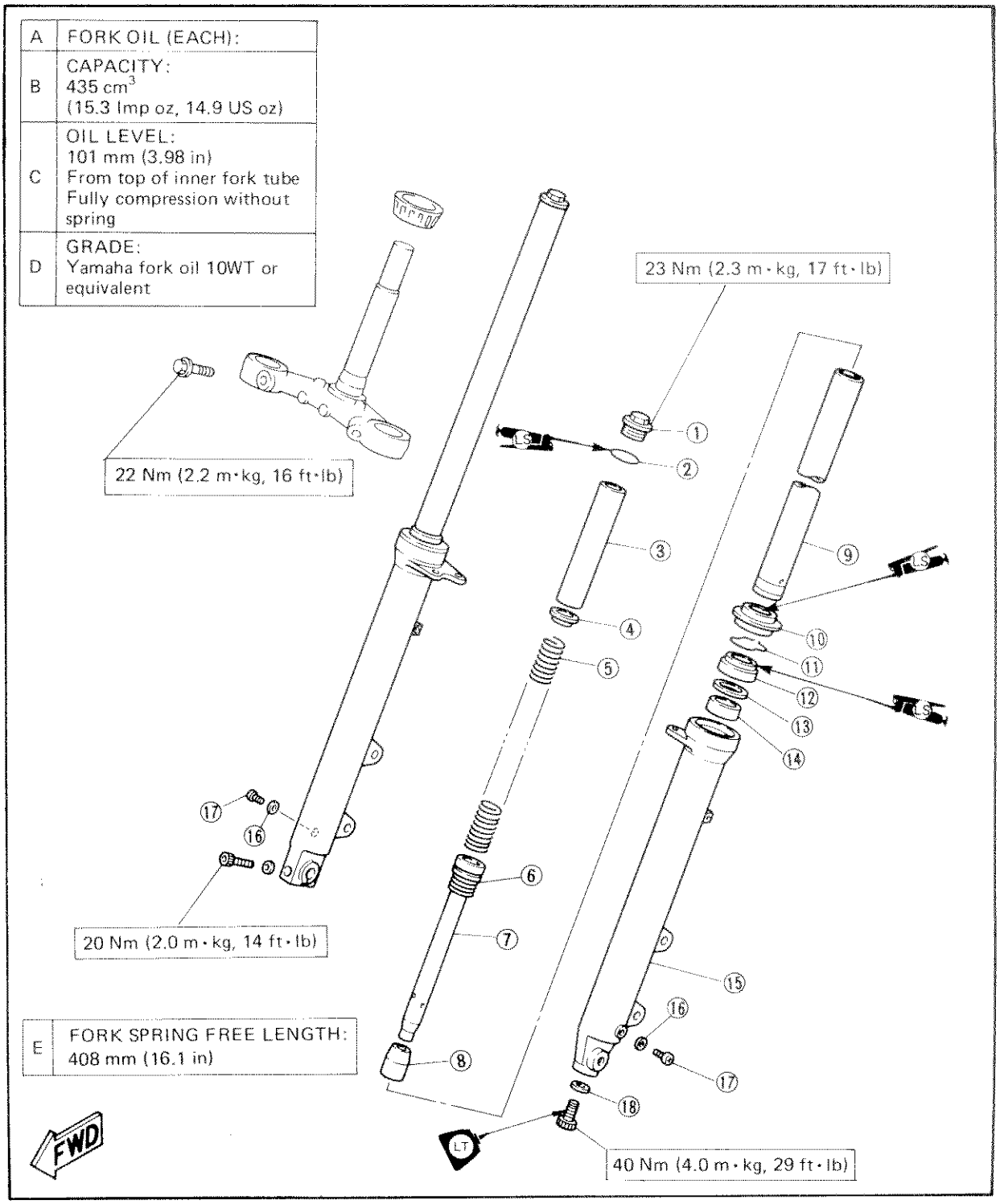
15. Adjust:
    - Drive chain slack ⓐ

Drive chain slack:
20 ~ 30 mm (0.8 ~ 1.2 in)

Refer to the "DRIVE CHAIN SLACK ADJUSTMENT" section in the CHAPTER 3.

FRONT FORK

① Cap bolt
② O-ring
③ Collar
④ Spring seat
⑤ Fork spring
⑥ Rebound spring
⑦ Damper rod
⑧ Oil lock piece
⑨ Inner tube
⑩ Dust seal
⑪ Retaining clip
⑫ Oil seal
⑬ Seal spacer
⑭ Guide bushing
⑮ Outer tube
⑯ Gasket
⑰ Drain screw
⑱ Gasket

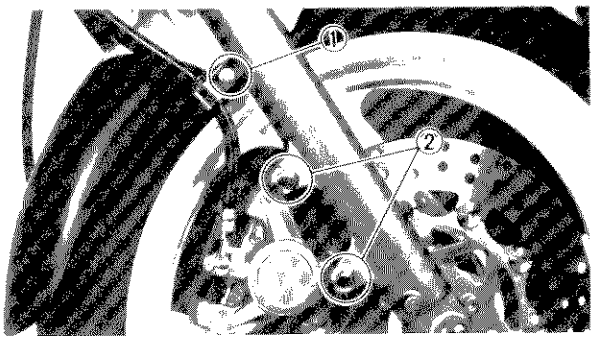


REMOVAL

⚠ WARNING:

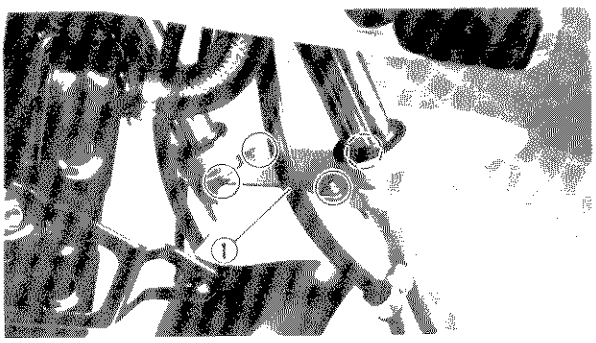
Securely support the motorcycle so there is no danger of it falling over.

1. Elevate the front wheel by placing a suitable stand under the engine.

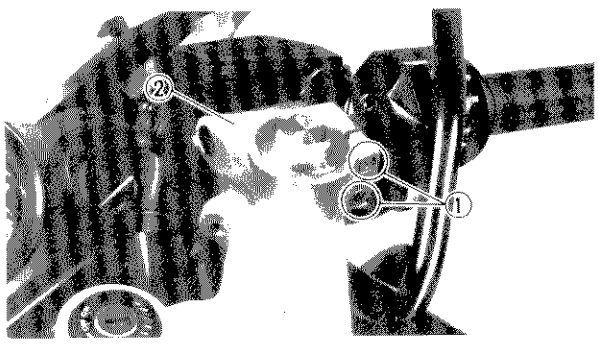


2. Remove:
   - Bolts (brake hose clamp) ①
   - Bolts (caliper) ②
3. Remove:
   - Front wheel

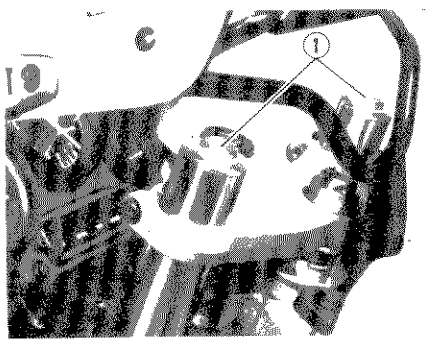
   Refer to the "FRONT WHEEL – REMOVAL" section.



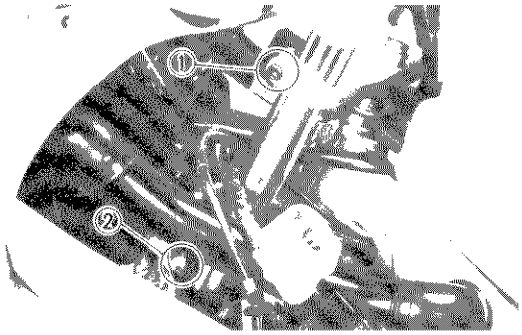
4. Remove:
   - Front fender ①



5. Loosen:
   - Bolts (handlebar bosses) ①
6. Remove:
   - Handlebar (left and right) ②



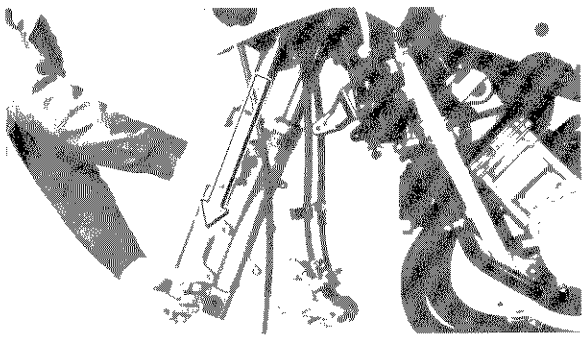
7. Loosen:
   - Cap bolts ①



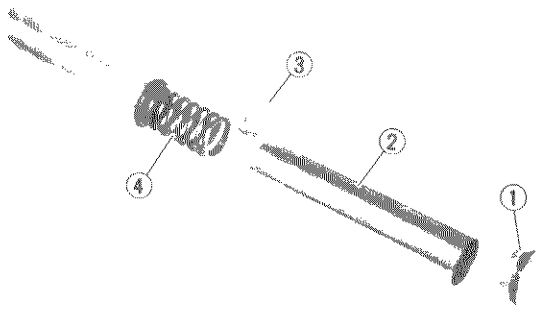
8. Loosen:
   - Pinch bolt (handlebar crown) ①
   - Pinch bolt (steering stem) ②

⚠ WARNING:

Support the fork before loosening the pinch bolts.



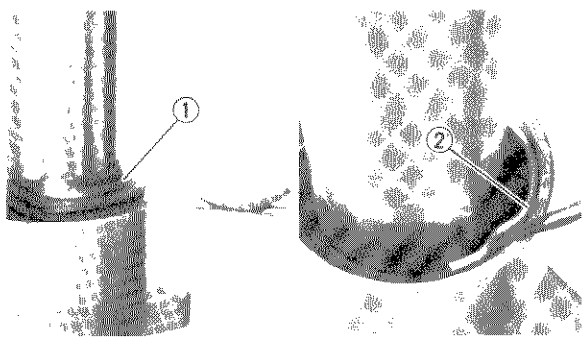
9. Remove:
   - Front fork



DISASSEMBLY

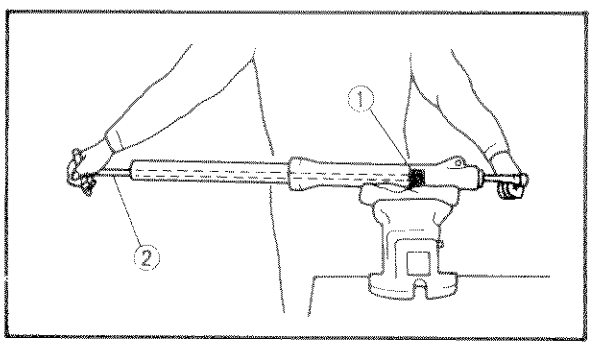
1. Remove:
   - Cap bolt ①
   - Collar ②
   - Spring seat ③
   - Fork spring ④

   Drain the fork oil



2. Remove:
   - Dust seal ①
   - Retaining clip ②

   Use a thin flat screwdriver, and be careful not to scratch the inner fork tube.



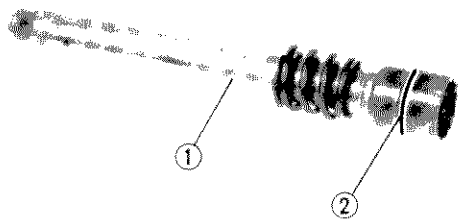
3. Remove:
   - Bolt (damper rod)

NOTE:

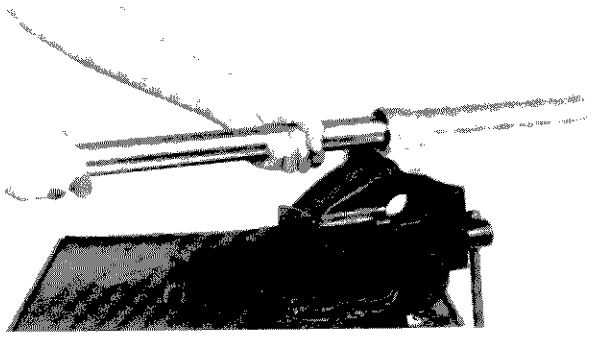
Loosen the bolt (damper rod) while holding the damper rod with the T-handle ② and holder ①.

Damper rod holder:
P/N YM-01300-1
90890-01294

T-Handle:
P/N YM-01326
90890-01326



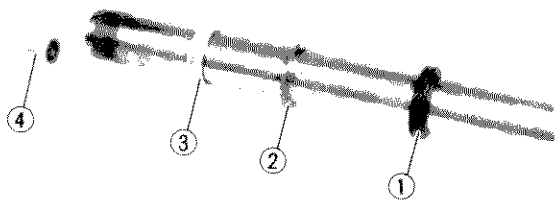
4. Remove:
   - Damper rod ①
   - Rebound spring ②



5. Remove:
   - Inner tube

Inner tube removal steps:
- Hold fork leg horizontally.
- Clamp the caliper mounting boss of the outer tube securely in a vise with soft jaws.
- Pull out the inner tube from the outer tube by forcefully, but carefully, with drawing the inner tube.

NOTE:
- Excessive force will damage the oil seal and/or the bushes. Damaged oil seal and bushing must be replaced.
- Avoid bottoming the inner tube in the outer tube during the above procedure, as the oil lock piece will be damaged.



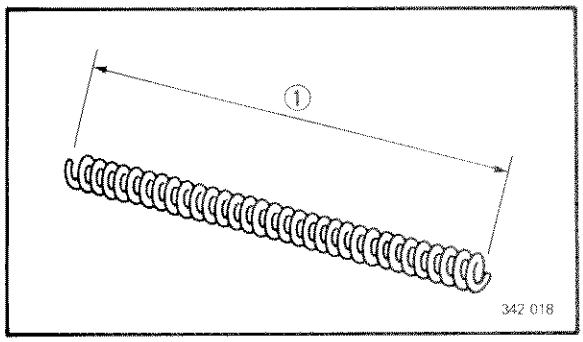
6. Remove:
   - Oil seal ①
   - Seal spacer ②
   - Guide bushing ③
   - Oil lock piece ④

INSPECTION

1. Inspect:
   - Inner tube
     Scratches/Bends → Replace.

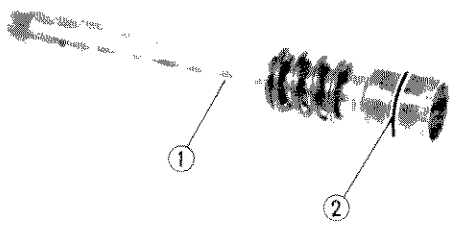
⚠ WARNING:

Do not attempt to straighten a bent inner fork tube as this may dangerously weaken the tube.



2. Inspect:
   - Outer tube
     Scratches/Bends/Damage → Replace.
3. Measure:
   - Fork spring
     Over specified limit → Replace.

Fork spring free length (limit) ① :
408 mm (16.1 in)



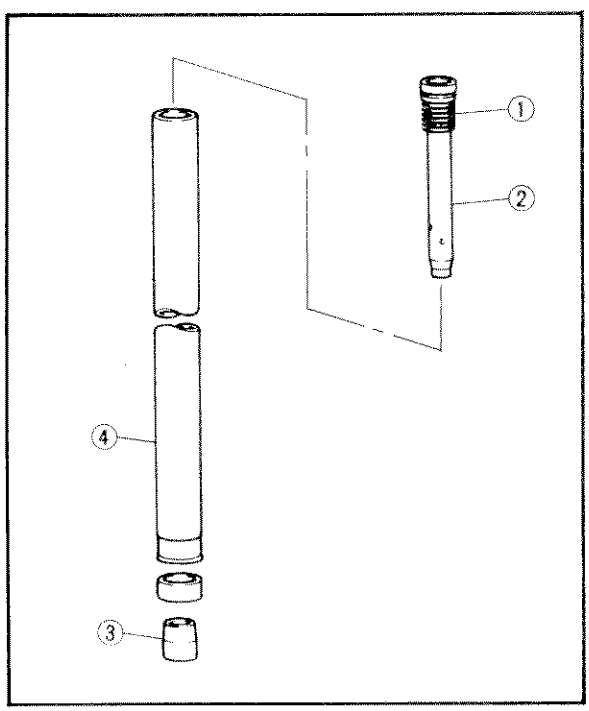
4. Inspect:
   - Damper rod ①
   - Ring ②
     Wear/Damage → Replace.
     Contamination → Blow out all oil passages with compressed air.
   - Oil lock piece
   - O-ring (cap bolt)
   - Damage → Replace.

ASSEMBLY

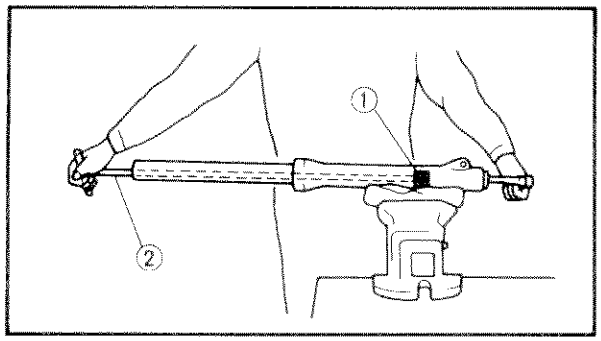
Before assembling, clean and inspect all parts and replace when necessary.

NOTE:

In front fork assembly, be sure to use following new parts. Do not reuse them.
- Slide bushing
- Guide bushing
- Oil seal
- Dust seal



1. Install:
   - Rebound spring ①
   - Damper rod ②
     Allow the rod to slide slowly down the tube until the it protrudes from the bottom.
   - Oil lock piece ③
     Fit oil lock piece over damper rod sticking out of the inner tube.
   - Inner tube ④
     Into the outer tube.



2. Tighten:
   - Bolt (damper rod)

   Use the damper rod holder ① and T-handle ② to lock the damper rod.

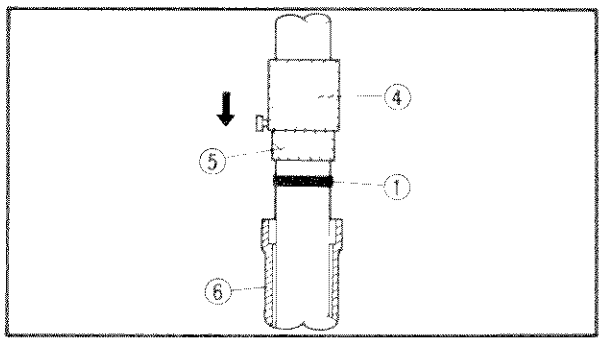
Bolt (damper rod):
40 Nm (4.0 m · kg, 29 ft · lb)
LOCTITE®

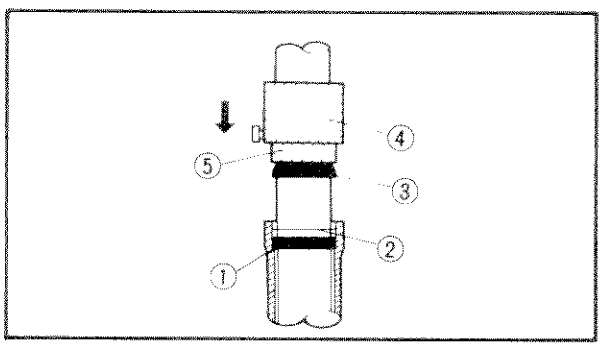
NOTE:

Tighten the bolt (damper rod) while holding the damper rod with the T-handle ② and holder ①.

Damper rod holder:
P/N YM-01300-1
90890-01294

T-handle:
P/N YM-01326
90890-01326





3. Install:
   - Guide bush ① (new)

   Into the outer tube ⑥.

   Use the fork seal driver weight ④ and adapter ⑤.
   - Seal spacer ②

   On the top of guide bushing ①.
   - Oil seal ③

   Use the fork seal driver weight ④ and adapter ⑤.

Fork seal driver weight:
P/N YM-33963
90890-01367

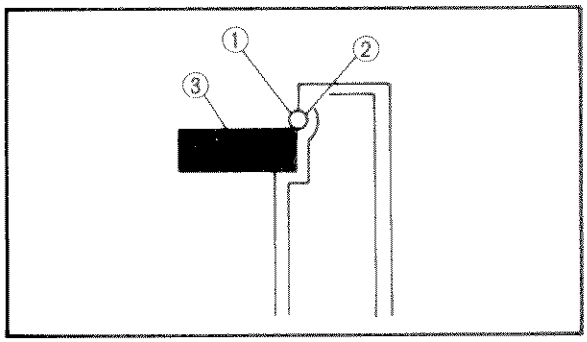
Fork seal driver adapter:
P/N YM-01372
90890-01372

NOTE:

Before installing the oil seal, apply the lithium soap base grease onto the oil seal lips.

⚠ CAUTION:

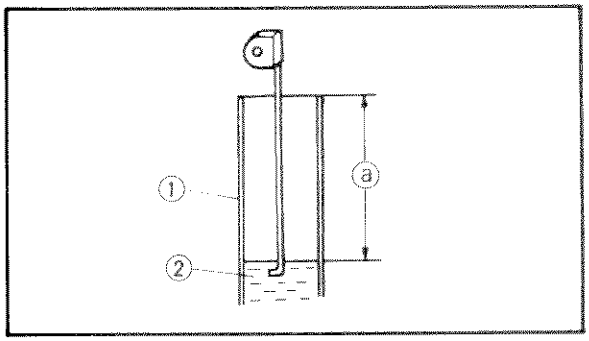
Be sure that the oil seal numbered side face upward.



4. Install:
   - Retaining clip ①
   - Dust seal

NOTE:
Fit the retaining clip ① correctly in the groove ② in the outer tube.

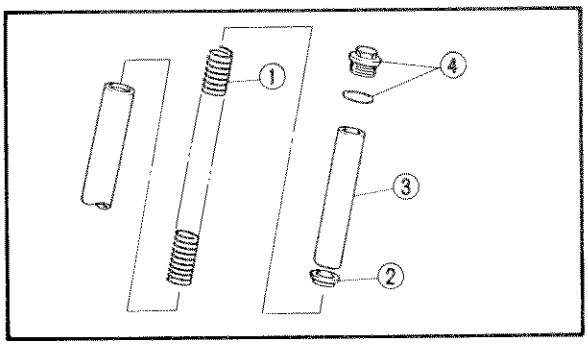
③ Oil seal



5. Fill:
   - Front fork

Each fork:
435 cm³
(15.3 Imp oz, 14.9 US oz)
Yamaha fork oil 10WT or equivalent
After filling, slowly pump the fork up and down to distribute oil.
Oil level ⓐ :
101 mm (3.98 in)
From the top of inner fork tube fully compressed without spring.

① Inner tube
② Fork oil

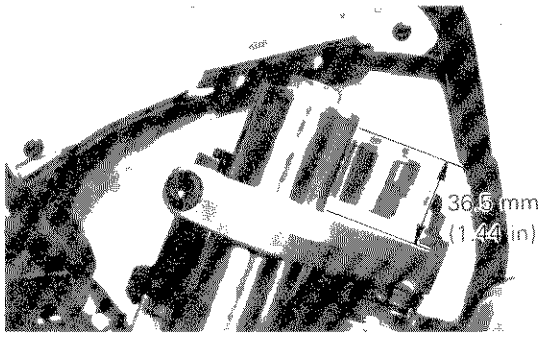


6. Install:
   - Fork spring ①
   - Spring seat ②
   - Collar ③
   - Cap bolt ④

NOTE:
- Fork spring must be installed with the larger pitch upward.
- Before installing the cap bolt, apply the lithium soap base grease to the O-ring.
- Temporarily tighten the cap bolt ④ yet.

INSTALLATION

Reverse the removal procedure.
Note the following points.



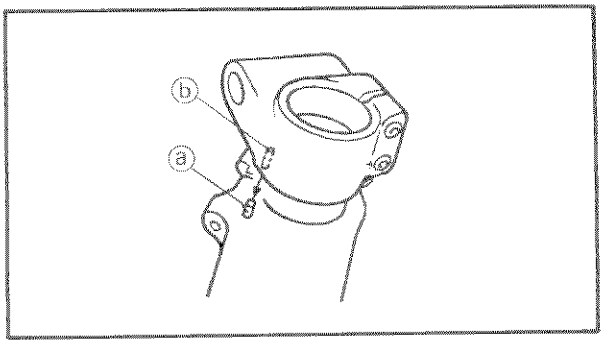
1. Install:
   - Front fork

   Temporary tighten the pinch bolts.

NOTE:
Hold the inner tube with its top 36.5 mm (1.44 in) above the top of the handlebar crown.

2. Tighten:
   - Cap bolt
   - Pinch bolt (handle crown)
   - Pinch bolt (steering stem)

Cap bolt:
23 Nm (2.3 m · kg, 17 ft · lb)
Pinch bolt (handlebar crown):
26 Nm (2.6 m · kg, 19 ft · lb)
Pinch bolt (steering stem):
22 Nm (2.2 m · kg, 16 ft · lb)



3. Install:
   - Handlebars (left and right)

NOTE:
Align the projection ⓐ with the hole ⓑ .

Bolts (handlebar)
23 Nm (2.3 m · kg, 17 ft · lb)

4. Install:
   - Front fender
   - Brake hose clamp

Bolt (front fender):
7 Nm (0.7 m · kg, 5.1 ft · lb)

5. Install:
   - Front wheel
   - Brake caliper (left and right)
   - Speedometer calbe

   Refer to the "FRONT WHEEL" section.

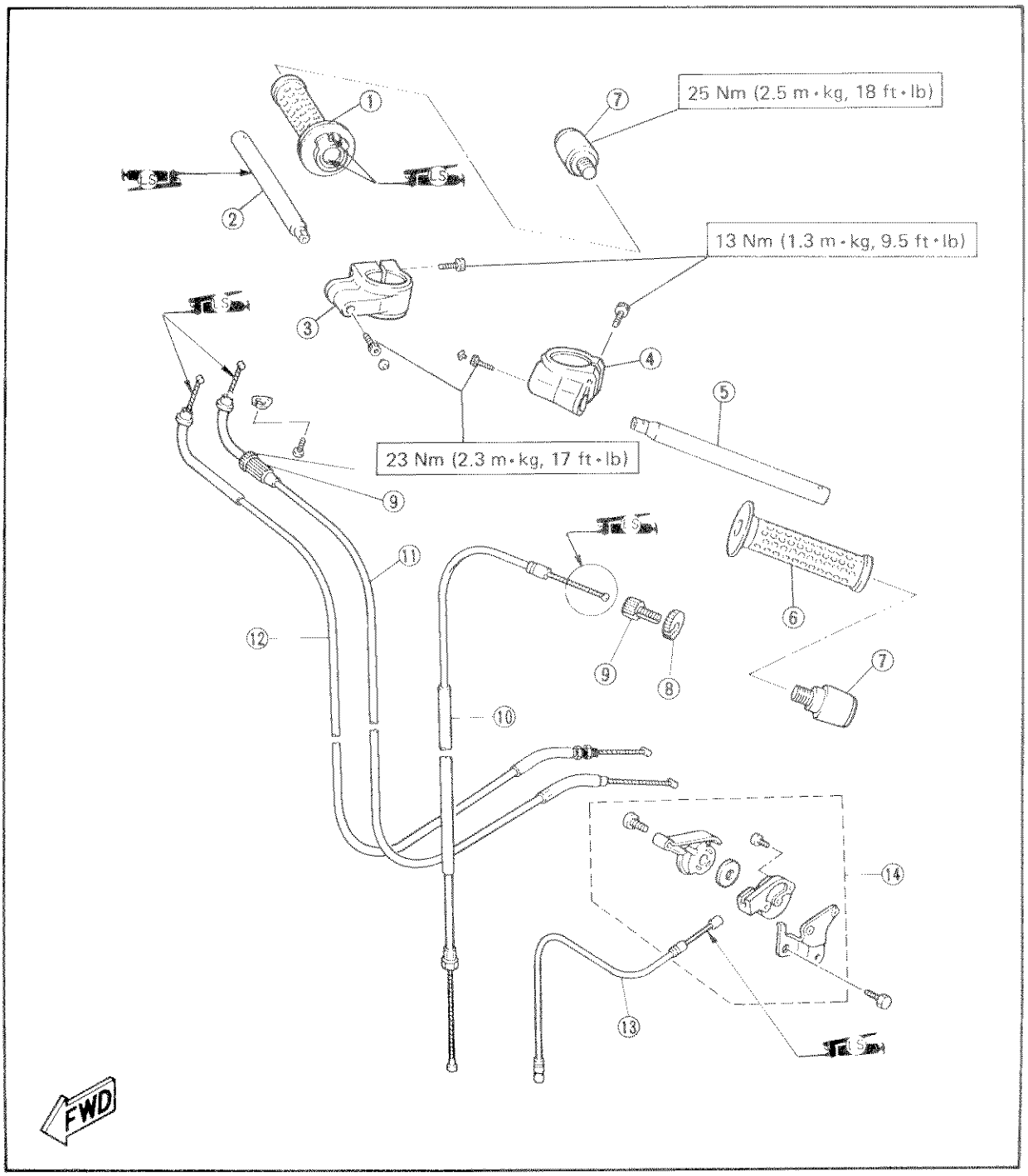
Front wheel axle.
58 Nm (5.8 m · kg, 42 ft · lb)
Bolts (brake caliper):
35 Nm (3.5 m · kg, 25 ft · lb)
Pinch bolt (front fork):
20 Nm (2.0 m · kg, 14 ft · lb)

⚠ WARNING:
Make sure that the brake hoses are routed properly.

STEERING HEAD AND HANDLEBAR

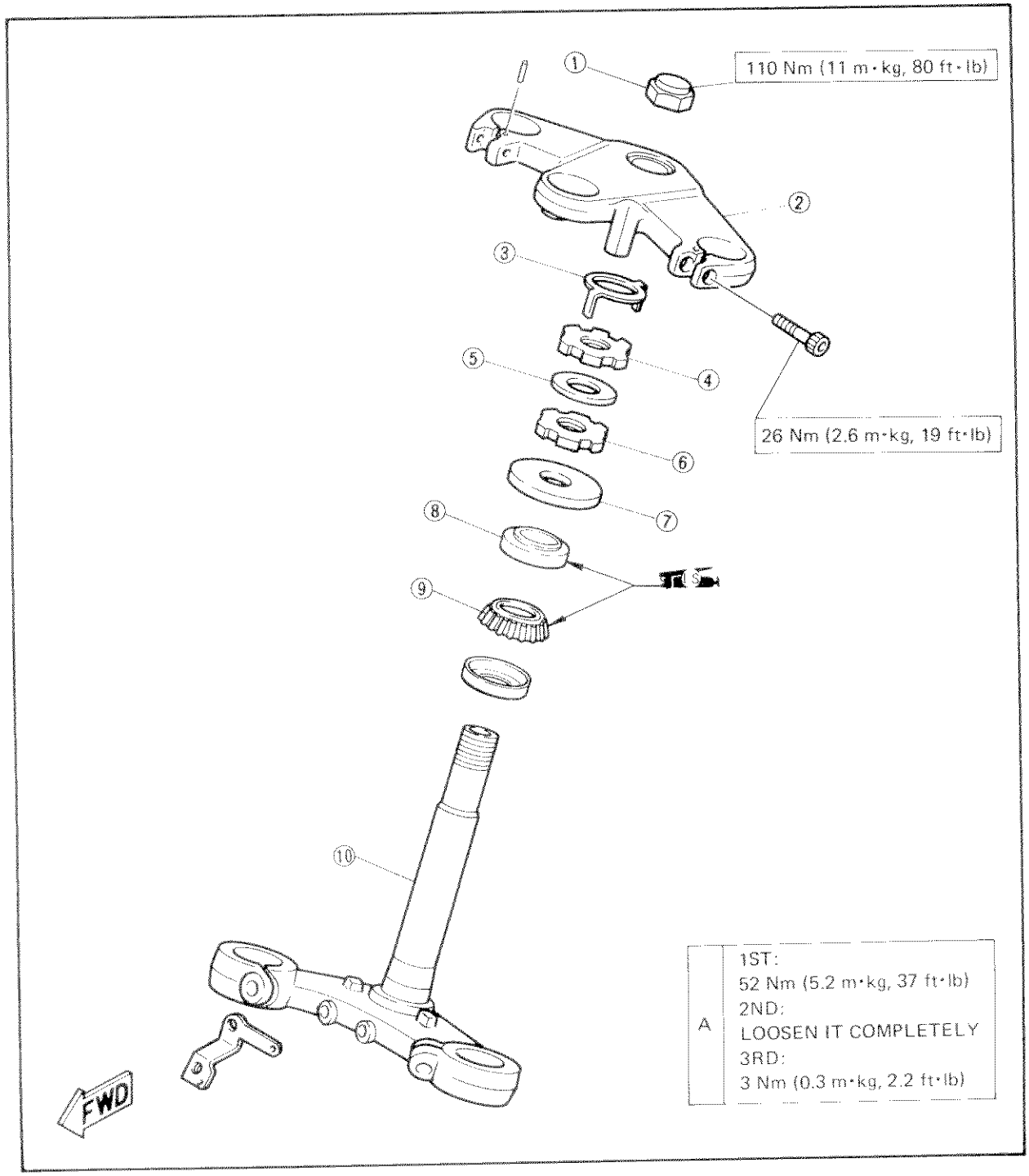
Handlebar

① Throttle guide tube
② Handlebar (Right)
③ Handlebar boss (Right)
④ Handlebar boss (Left)
⑤ Handlebar (Left)
⑥ Grip rubber
⑦ Handlebar grip end
⑧ Locknut
⑨ Adjuster
⑩ Clutch cable
⑪ Throttle cable 1
⑫ Throttle cable 2
⑬ Starter cable
⑭ Starter lever assembly



Steering Head

① Steering stem nut
② Handle crown
③ Lock washer
④ Ring nut (Upper)
⑤ Washer
⑥ Ring nut (Lower)
⑦ Bearing cover
⑧ Bearing (Upper)
⑨ Bearing (Lower)
⑩ Steering stem

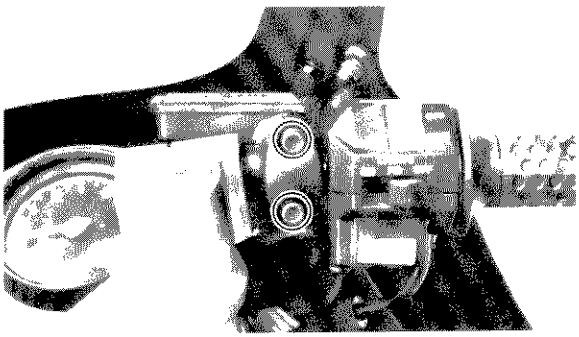


REMOVAL

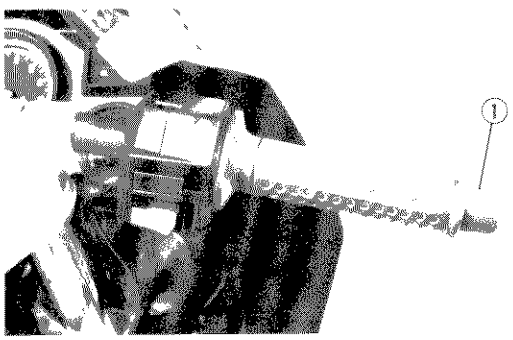
⚠ WARNING:

Securely support the motorcycle so there is no danger of it falling over.

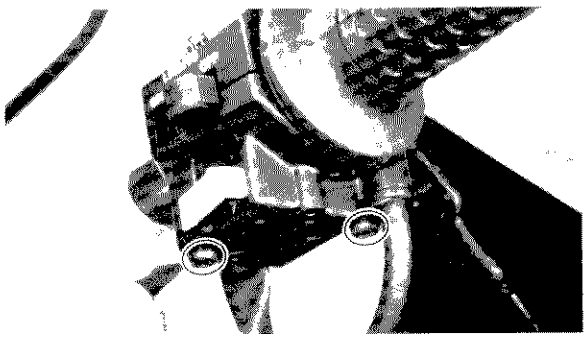
1. Remove:
   - Side cowlings
     Refer to "COWLINGS/COVERS REMOVAL AND INSTALLATION".
   - Front wheel
     Refer to the "FRONT WHEEL" section.



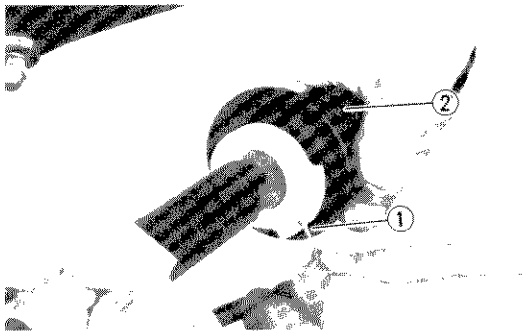
2. Remove:
   - Bracket (master cylinder)



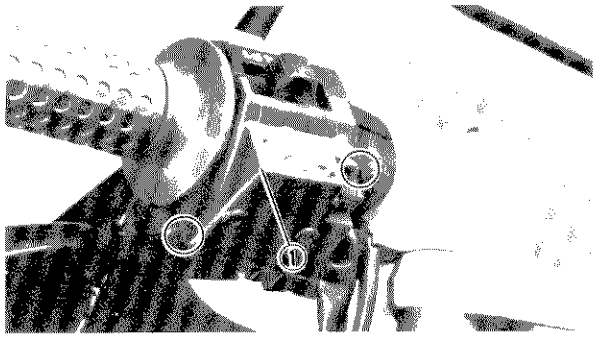
3. Remove:
   - Handlebar grip end (right) ①



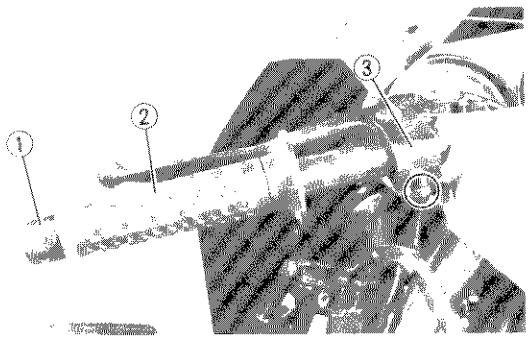
4. Remove:
   - Handlebar switch (right)



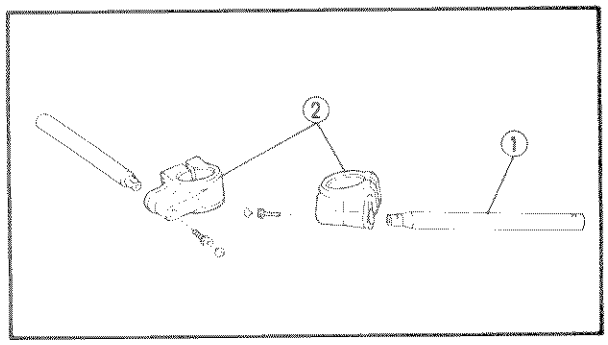
5. Remove:
   - Throttle cable ①
   - Handlebar grip (right) ②



6. Remove:
   - Handlebar switch (left) ①

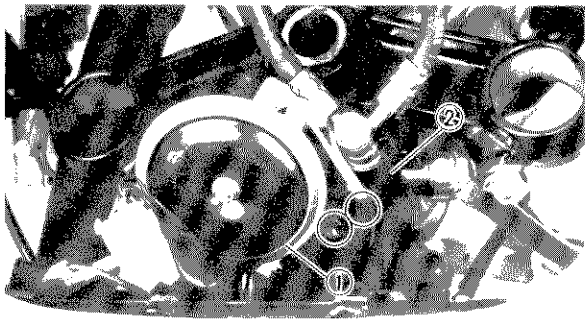


7. Remove:
   - Handlebar grip end (left) ①
   - Handlebar grip (left) ②
   - Clutch lever holder ③

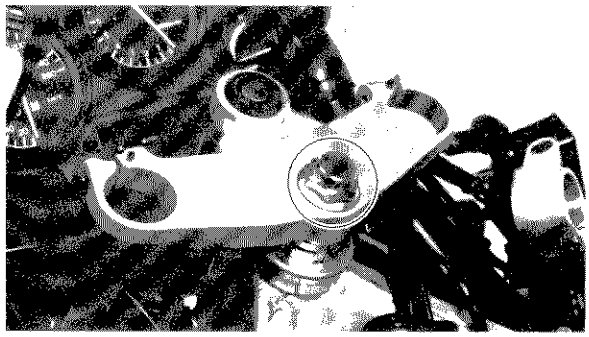


8. Remove:
   - Handlebar (right) ①
   - Handlebar bosses (left and right) ② with handlebar (left).

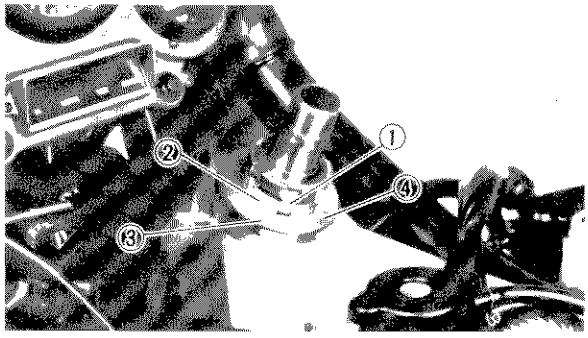
9. Remove:
   - Front forks (left and right)
     Refer to the "FRONT FORK — REMOVAL" section.
   - Top cover
   - Rear view mirrors
   - Cowling stay
   - Air filter case



10. Remove:
- Horn ①
- Joint (brake hose) ②



11. Remove:
- Handlebar crown



12. Remove:
- Lock washer ①
- Ring nut (upper) ②

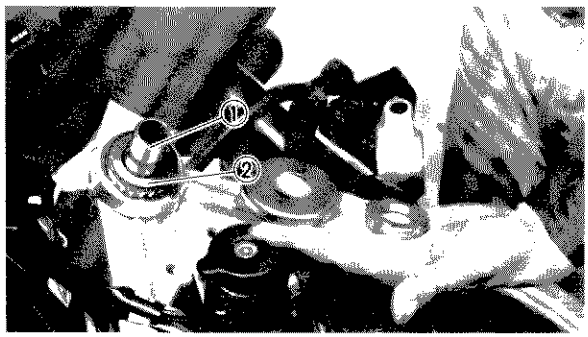
Use ring nut wrench

Ring nut wrench:
P/N YU-33975
90890-01403

13. Remove:
- Washer
- Ring nut (lower) ③
- Bearing cover ④

⚠ WARNING:

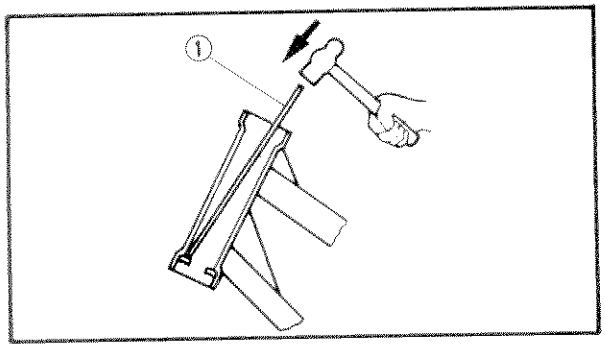
Support the steering shaft so that it may not fall down.



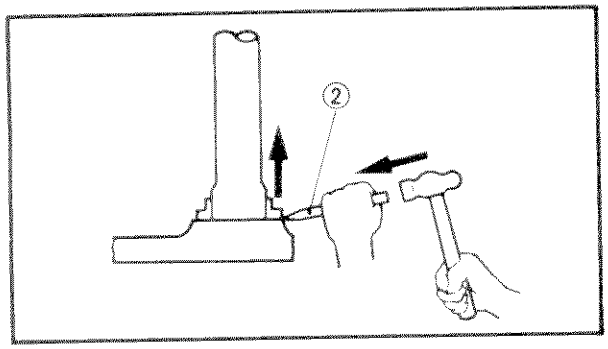
14. Remove:
- Steering stem ①
- Bearing (upper) ②
- Bearing (lower)

INSPECTION

1. Wash the bearing in a solvent.
2. Inspect:
   - Bearings
   - Bearing race
     Pitting/Damage → Replace.

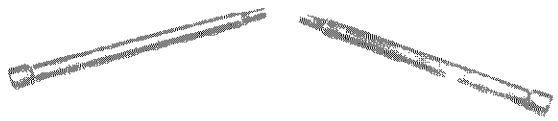


Bearing race remplacement steps:
- Remove the bearing races using long rod ① and the hammer as shown.
- Remove the bearing race on the steering stem using the floor chisel ② and the hammer as shown.
- Install the new dust seal and races.

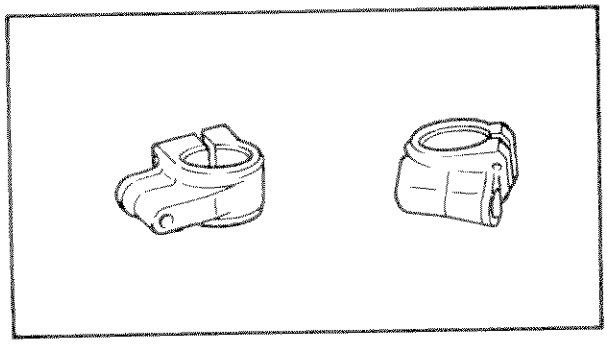


NOTE:
Always replace bearings and races as a set.

3. Inspect:
   - Handlebars
     Bents/Damage → Replace.



4. Inspect:
   - Handlebar bosses
     Cracks/Damage → Replace.

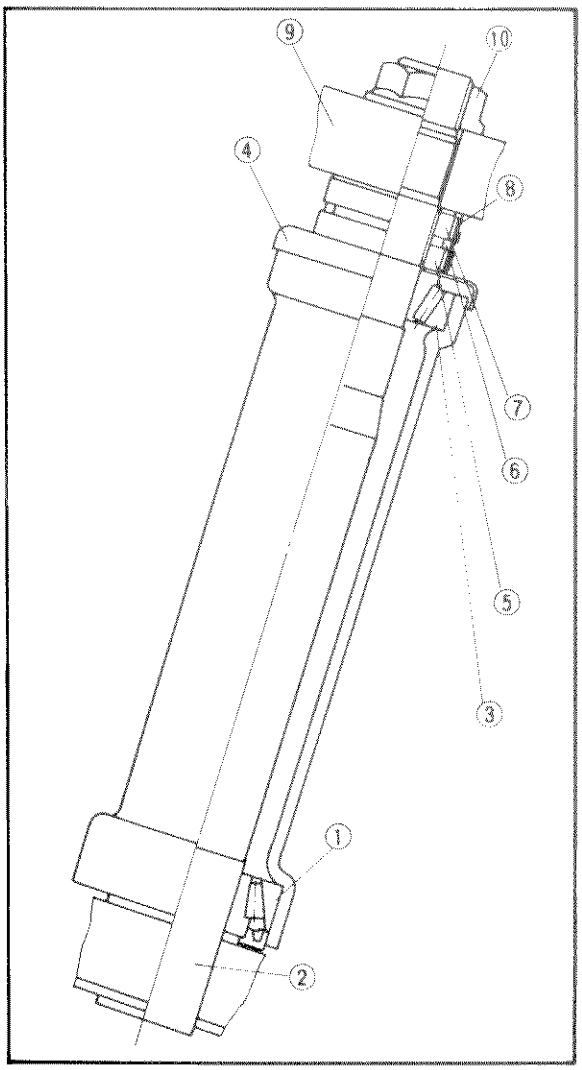


INSTALLATION

Reverse the removal procedure.
Note the following points.

1. Lubricate:
   - Bearings (upper/lower)
   - Bearing races

	Wheel bearing grease



2. Install:
   - Bearing (lower) ①
     Onto the steering stem.
   - Steering stem ②

⚠ CAUTION:

Hold the steering stem until it is secured.

   - Bearing (uppers) ③
   - Bearing cover ④
   - Ring nut (lower) ⑤
3. Tighten:
   - Ring nuts (lower/upper)

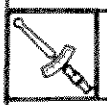
Ring nuts tightening steps:

NOTE:
Set the torque wrench to the ring nut wrench so that they form a right angle.

- Install the ring nut (lower) ⑤ .

NOTE:
The tapered side of ring nut must face downward.

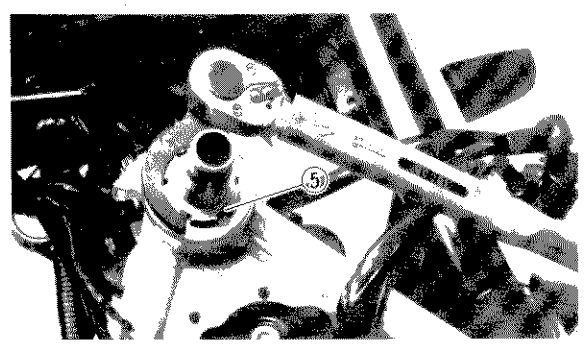
- Tighten the ring nut ⑤ using the ring nut wrench.

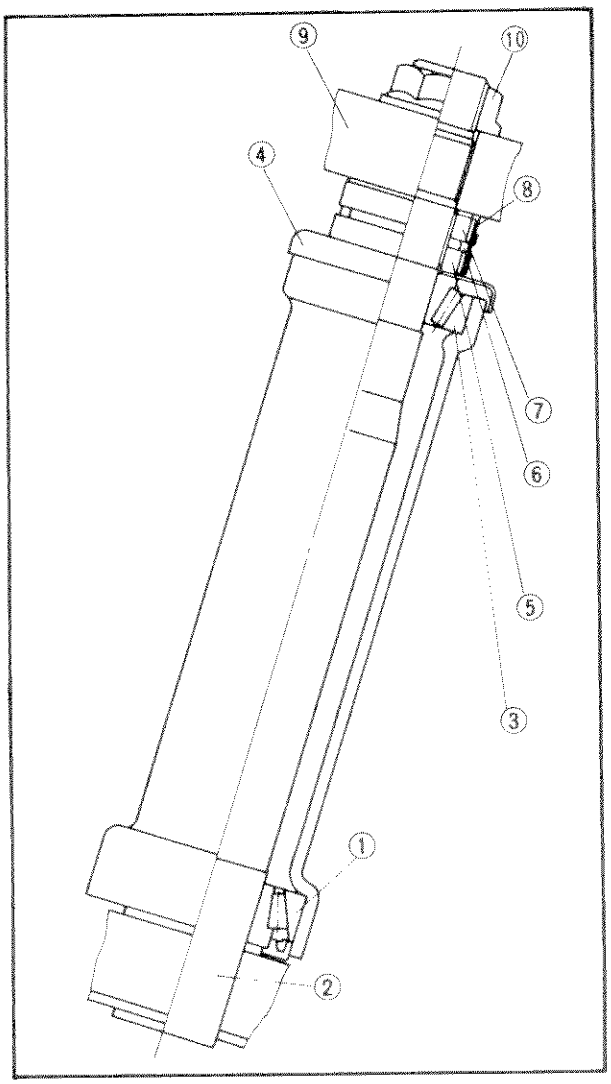
	Ring nut wrench: **P/N YU-33975** **90890-01403**
	**Ring nut ⑤ (initial tightening):** **52 Nm (5.2 m · kg, 37 ft · lb)**

- LOOSEN THE RING NUT ⑤ COMPLETELY and retighten it to specification.

⚠ WARNING:

Do not over-tightening.





Ring nut ⑤ (final tightening):
3 Nm (0.3 m · kg, 2.2 ft · lb)

- Check the steering stem by turning it lock to lock. If there is any binding, remove the steering stem assembly and inspect the steering bearings ①, ③.
- Install the washer ⑥.
- Install the ring nut (upper) ⑦.

NOTE:
The tapered side of ring nut must face downward.

- FINGER TIGHTEN THE RING NUT ⑦, then align the slots of both ring nuts. If not aligned, hold the lower ring nut ⑤ and tighten the other until they are aligned.
- Install the lock washer ⑧.

NOTE:
Make sure the lock washer tab is placed in the slots.

- Install the handle crown ⑨, and tighten the steering stem nut ⑩ to specification.

Nut (steering stem):
110 Nm (11.0 m · kg, 80 ft · lb)

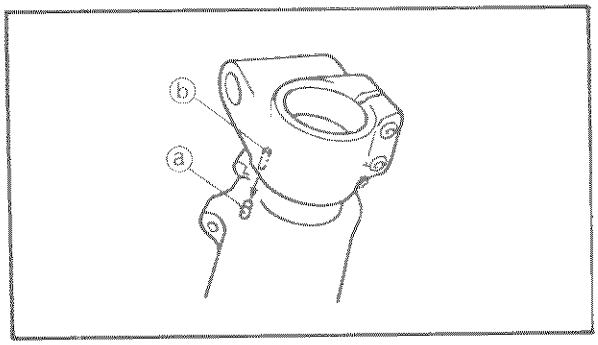
4. Install:
   - Brake hose joint

Brake (brake hose joint):
10 Nm (1.0 m · kg, 7.2 ft · lb)

5. Install:
   - Front fork (left and right)

   Refer to the "FRONT FORK" section.

Pinch bolt (handlebar crown):
26 Nm (2.6 m · kg, 19 ft · lb)
Pinch bolt (steering stem):
22 Nm (2.2 m · kg, 16 ft · lb)

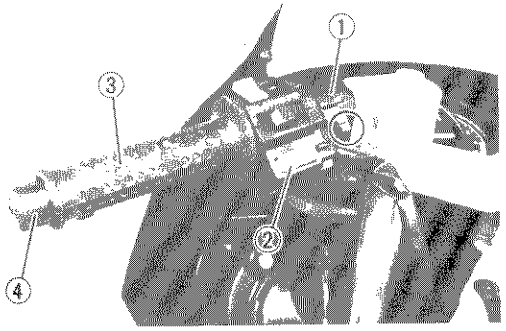


6. Install:
   - Handlebar bosses

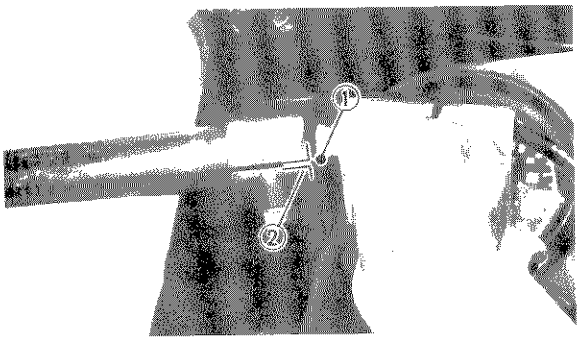
NOTE:
Align the projection ⓐ with the hole ⓑ .

7. Install:
   - Handlebars

Pinch bolts (handlebar):
23 Nm (2.3 m · kg, 17 ft · lb)

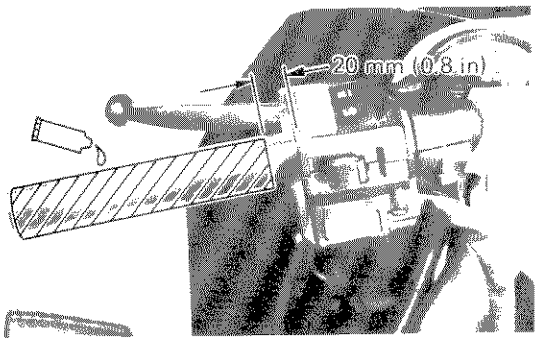


8. Install:
   - Clutch lever holder ①
   - Handlebar switch (left) ②
   - Handlebar grip (left) ③
   - Handlebar grip end (left) ④



Handlebar (left) installation steps:
- Install the lever holder with the punched mark ① on the handlebar aligning with the slit in the lever holder ② .

Bolt (lever holder):
10 Nm (1.0 m · kg, 7.2 ft · lb)



- Install the handlebar switch (left)
- Apply align coat of an adhesive for rubber to the handlebar end, as shown.

ⓐ 20 mm (0.8 in)

- Fit the handlebar grip fully over the handlebar end.

⚠ WARNING:

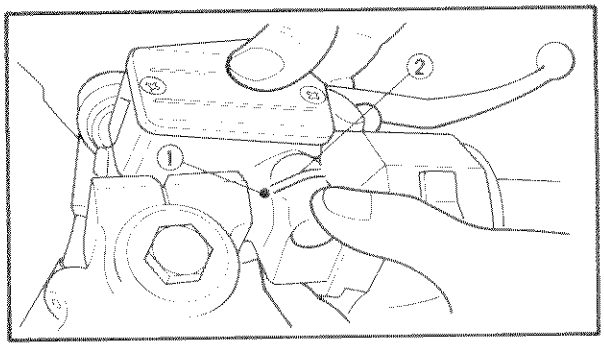
Leave the handlebar intact with the adhesive becomes dry enough to make the grip and handlebar stuck securely.

• Install the handlebar grip end (left).

	Handlebar grip end: 25 Nm (2.5 m · kg, 18 ft · lb)

9. Install:
   • Handlebar grip (right)
   • Throttle cable
   • Handlebar switch (right)

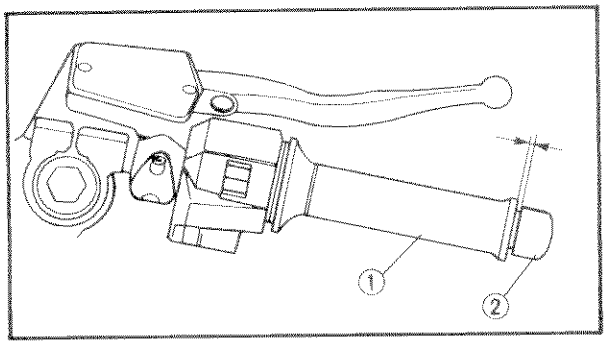
NOTE:
Before installing the handlebar grip (Right), apply a light coat of lithium soap base grease onto the surfaces where the handlebar and throttle grip make contact.



10. Install:
   • Front brake master cylinder

NOTE:
Install the master cylinder with the punched mark ① on the handlebar aligning with the master cylinder end ② .

	Bolts (master cylinder bracket): 9 Nm (0.9 m · kg, 6.5 ft · lb)



11. Install:
   • Handlebar grip end (right) ①

⚠ WARNING:

- **Provide a clearance of 1 mm (0.04 in) between the handlebar grip ② and the handlebar grip end ① . Otherwise, the grip may not move.**
- **Check the throttle grip for smooth action.**

	Handlebar grip end: 25 Nm (2.5 m · kg, 18 ft · lb)

12. Install:
    - Front fender

Bolt (front fender):
7 Nm (0.7 m · kg, 5.1 ft · lb)

13. Install:
    - Front wheel

    Refer to the "FRONT WHEEL" section.

Wheel axle:
58 Nm (5.8 m · kg, 42 ft · lb)
Bolt (brake caliper):
35 Nm (3.5 m · kg, 25 ft · lb)
Pinch bolt (front fork):
20 Nm (2.0 m · kg, 14 ft · lb)

14. Install:
    - Clutch cable

NOTE:
Apply a light coat of lithium soap base grease onto the clutch cable end.

15. Adjust:
    - Clutch cable free play

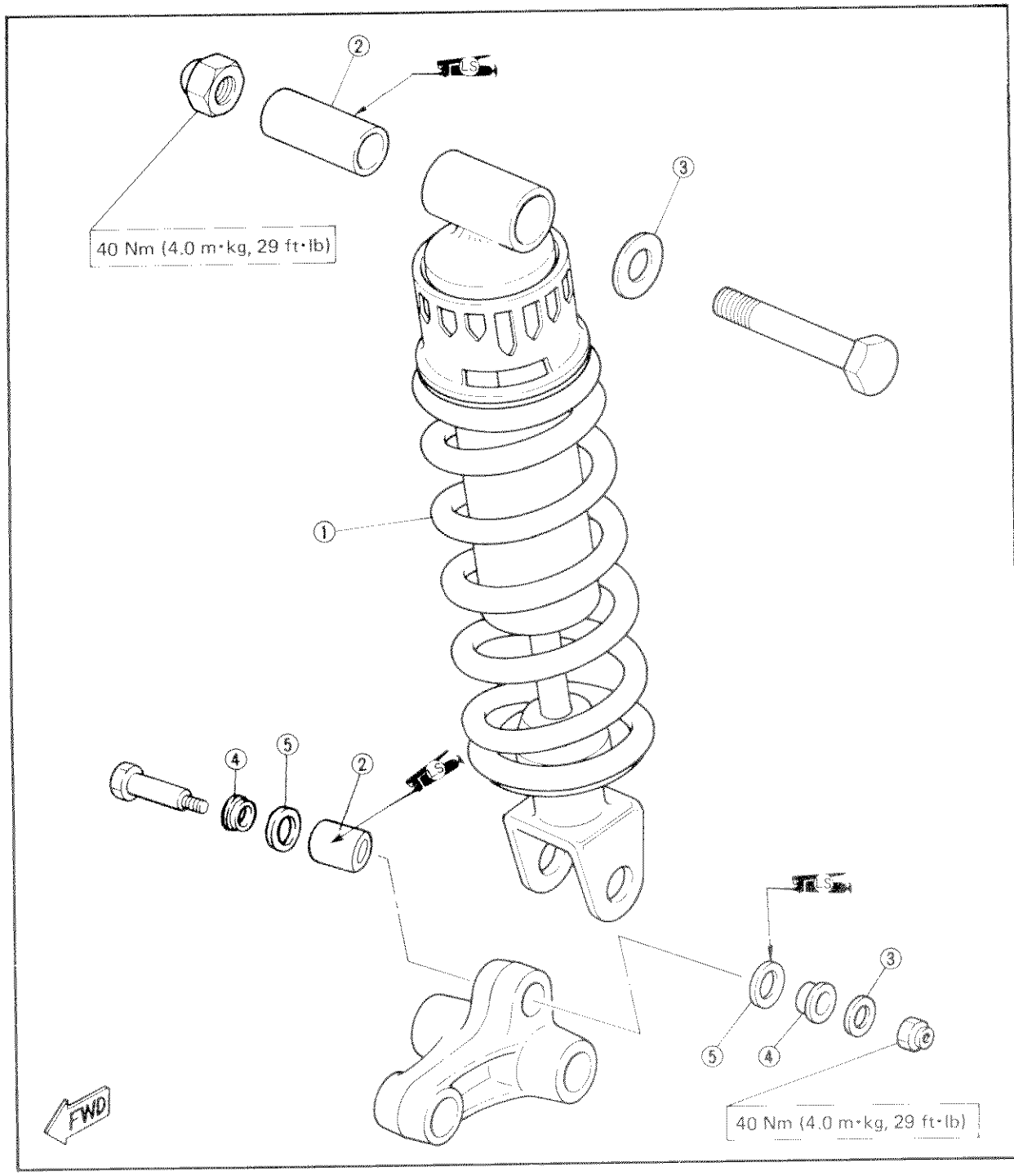
    Refer to the "CLUTCH ADJUSTMENT" section in the CHAPTER 3.

Free play:
2 ~ 3 mm (0.08 ~ 0.12 in)
At the lever pivot.

REAR SHOCK ABSORBER AND SWINGARM

Rear Shock Absorber

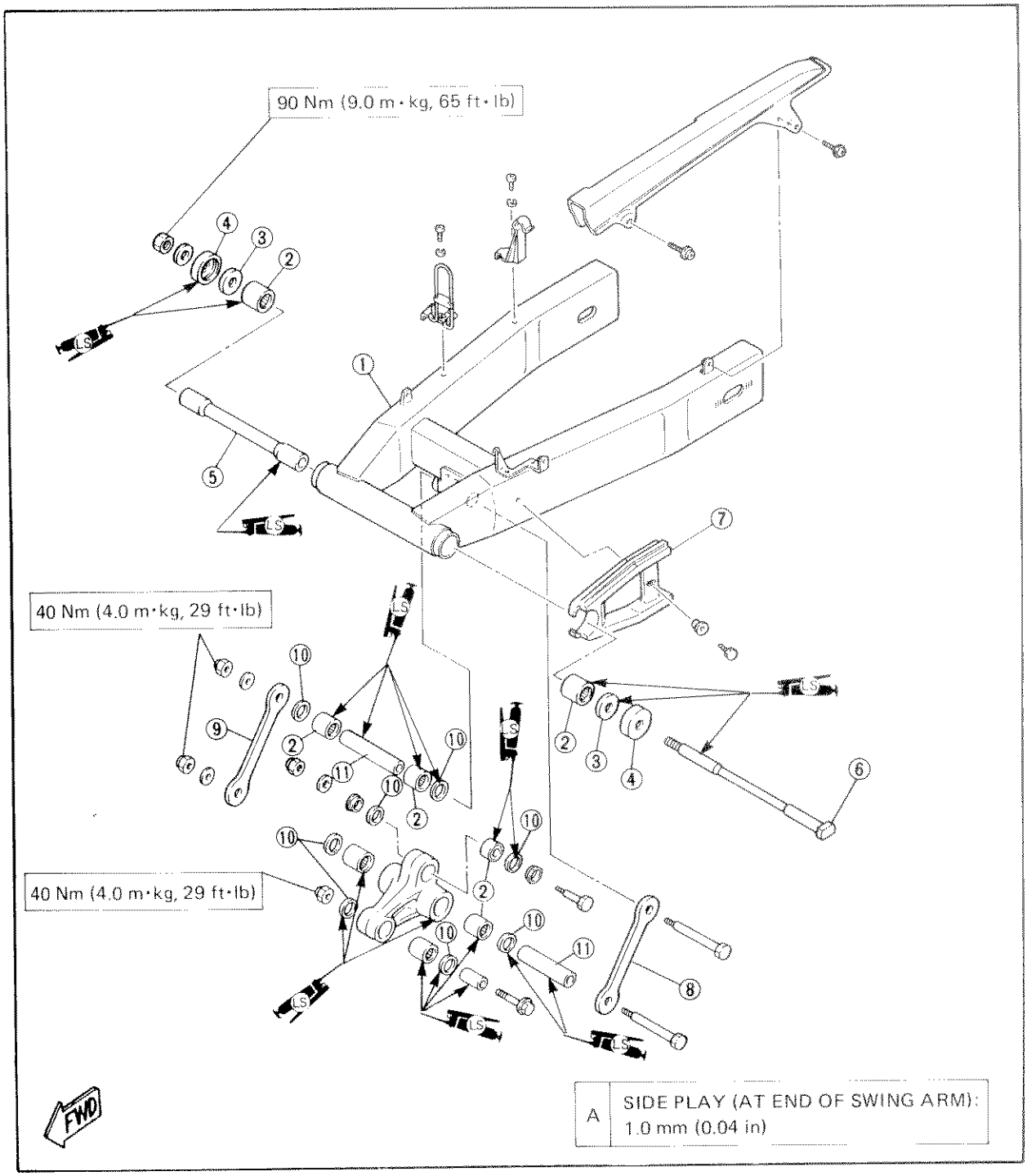
(1) Shock absorber
(2) Collar
(3) Washer
(4) Spacer
(5) Oil seal



Swingarm

① Swingarm
② Bearing
③ Thrust washer
④ Thrust cover
⑤ Bush
⑥ Pivot shaft
⑦ Guard seal
⑧ Connecting rod (Left)
⑨ Connecting rod (Right)
⑩ Oil seal
⑪ Collar
⑫ Relay arm

NOTE:
Coat the bearings, bushings, thrust covers, oil seals, and collars with a liberal amount of light weight lithium-soap base grease before installing. After installing, thoroughly wipe off excess grease.

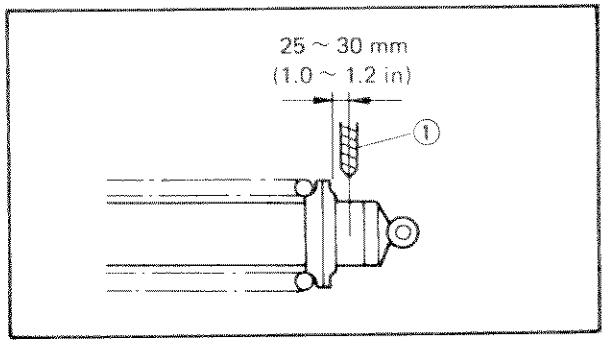


HANDLING NOTES

⚠ WARNING:

This shock absorber contains highly compressed nitrogen gas. Read and understand the following information before handling the shock absorber. The manufacturer cannot be held responsible for property damage or personal injury that may result from improper handling.

1. **Do not tamper or attempt to open the cylinder assembly.**
2. **Do not subject shock absorber to an open flame or other high heat. This may cause the unit to explode due to excessive gas pressure.**
3. **Do not deform or damage the cylinder in any way. Cylinder damage will result in poor damping performance.**



DISPOSAL NOTES

Shock absorber disposal steps:

Gas pressure must be released before disposing the shock absorber. To do so, drill ① a 2 ~ 3 mm (0.08 ~ 0.12 in) hole through the cylinder wall at a point 25 ~ 30 mm (1.0 ~ 1.2 in) under the spring seat.

⚠ CAUTION:

Wear eye protection to prevent eye damage from escaping gas and/or metal chips.

REMOVAL

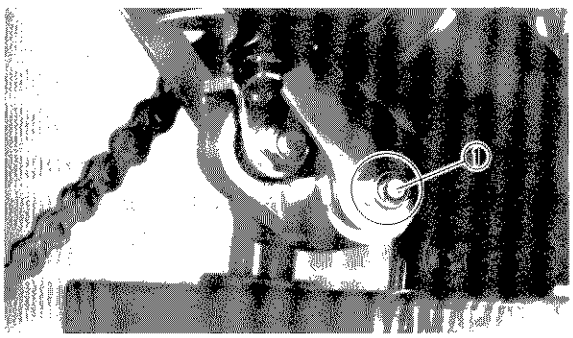
Rear shock absorber

1. Remove:
   - Lower cowlings (left and right)
     Refer to the "COWLING/COVERS REMOVAL AND INSTALLATION — REMOVAL" section in the CHAPTER 3.

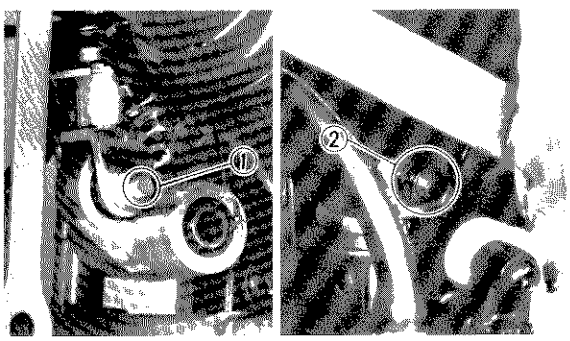
2. Place the motorcycle on a level place, and elevate the rear wheel by placing the suitable stand under the frame.

⚠ WARNING:

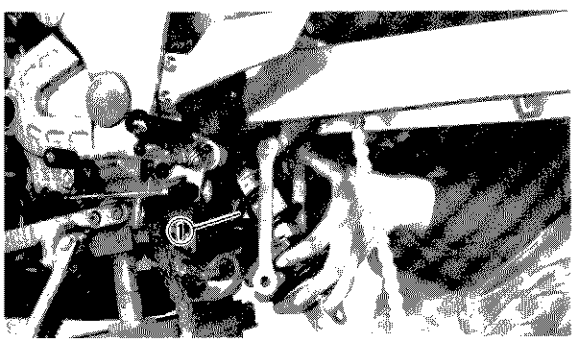
Securely support the motorcycle so there is no danger of it falling over.



3. Remove:
   - Bolt (connecting rod) ①
   - Collar



4. Remove:
   - Bolt (rear shock absorber – lower) ①
   - Spacers
   - Collar
   - Bolt (rear shock absorber – upper) ②



5. Remove:
   - Rear shock absorber ①

NOTE:

Lift up the swingarm to remove the rear shock absorber.

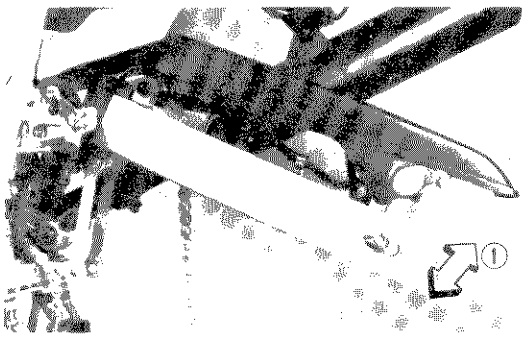
Swingarm

1. Remove:
   - Rear wheel

   Refer to the "REAR WHEEL" section.

⚠ WARNING:

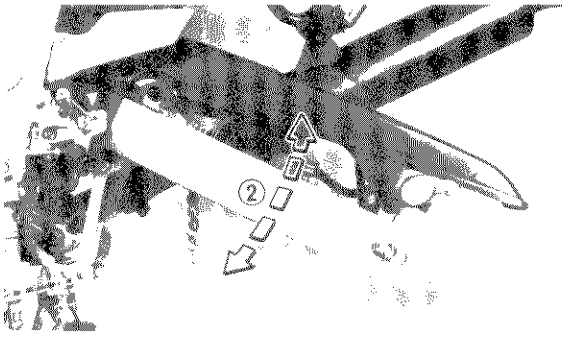
Securely support the motorcycle so there is no danger of it falling down.



2. Check:
- Swingarm (side play) ①

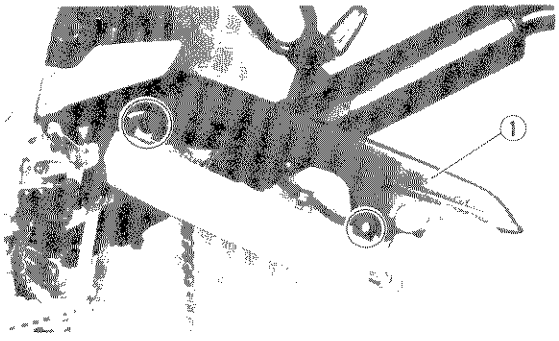
Side play → Replace the bearings and collar.
Move the swingarm from side to side.
There should be no noticeable side play.

Side play (at end of swingarm):
1.0 mm (0.04 in)

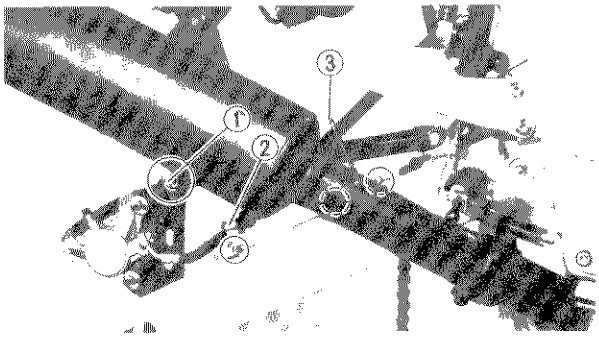


3. Check:
- Swingarm (vertical movement) ②

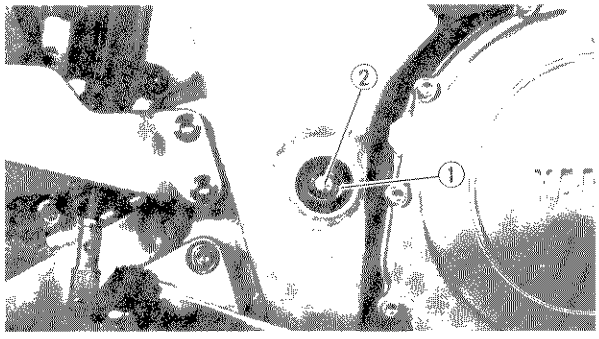
Tightness/Binding/Rough spots → Grease the swingarm pivot or replace bearings/-collars if necessary.
Move the swingarm up and down.



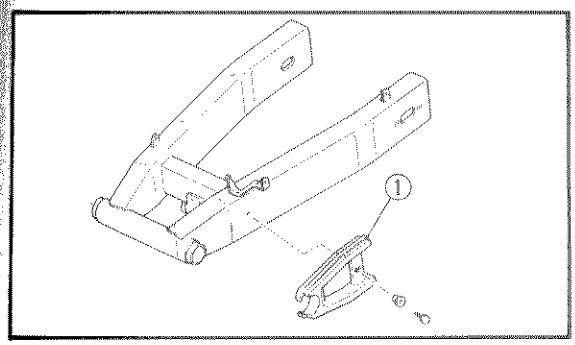
4. Remove:
- Chain case ①



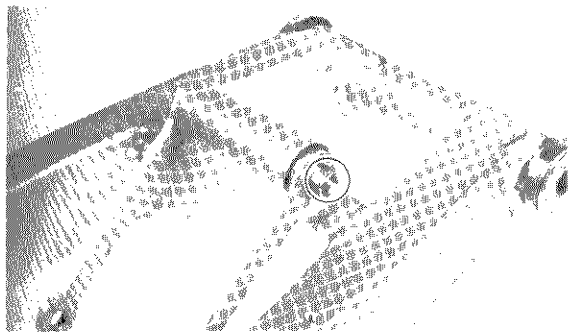
5. Remove:
- Cotter pin
- Nut (tension bar – front) ①
- Bolt
- Clamp (brake hose) ②
- Holder (brake hose) ③



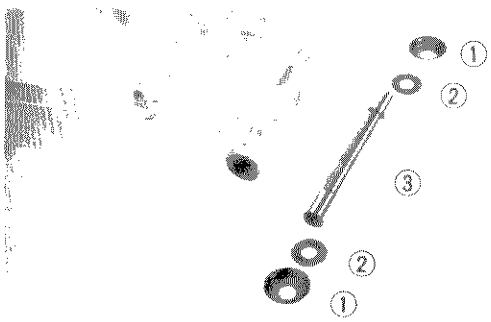
6. Remove:
- Nut (pivot shaft) ①
- Pivot shaft ②
- Swingarm



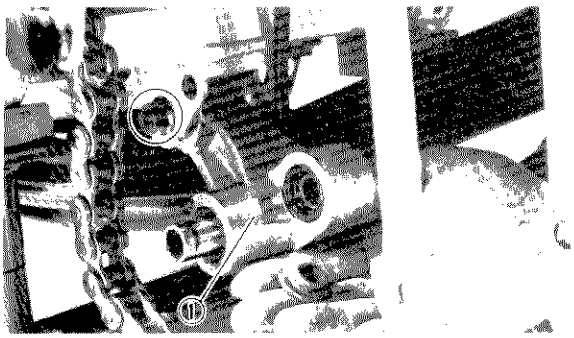
7. Remove:
   - Chain guide ①



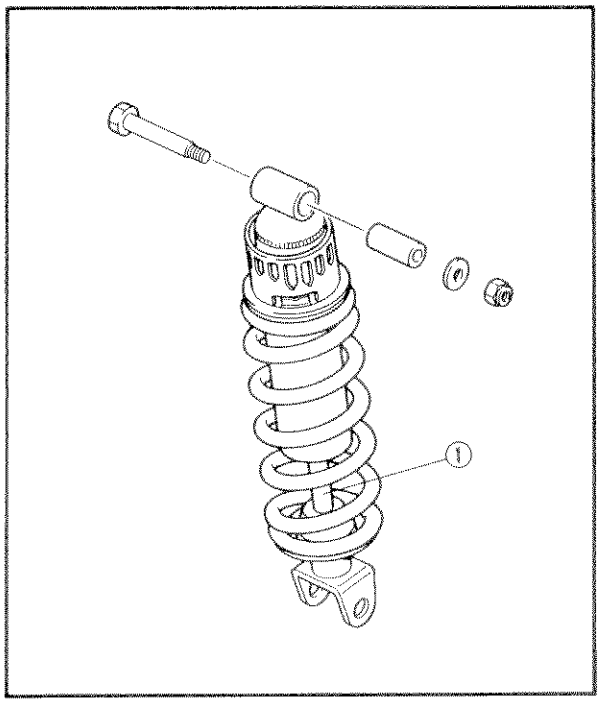
8. Remove:
   - Arms (left and right)



9. Remove:
   - Thrust covers ①
   - Thrust washer ②
   - Bush ③



10. Remove:
    - Relay arm ①



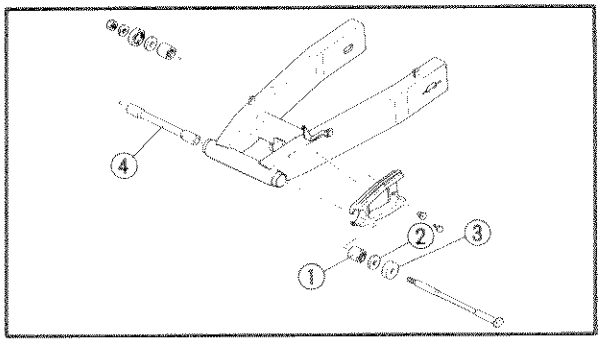
INSPECTION

Rear shock absorber

1. Inspect:
   - Rear shock absorber
   - Rod (rear shock absorber) ①

   Oil leaks/Damage → Replace.
2. Inspect:
   - Bushings
   - Oil seals

   Wear/Damage → Replace.



Swingarm

1. Wash the swingarm pivoting parts in a solvent.
2. Inspect:
   - Bearings (race/rollers) ①

   Pitting/Damage → Replace.
   - Thrust washers ②
   - Thrust covers ③

   Wear/Damage → Replace.
   - Inner collar ④
   - Pivot shaft

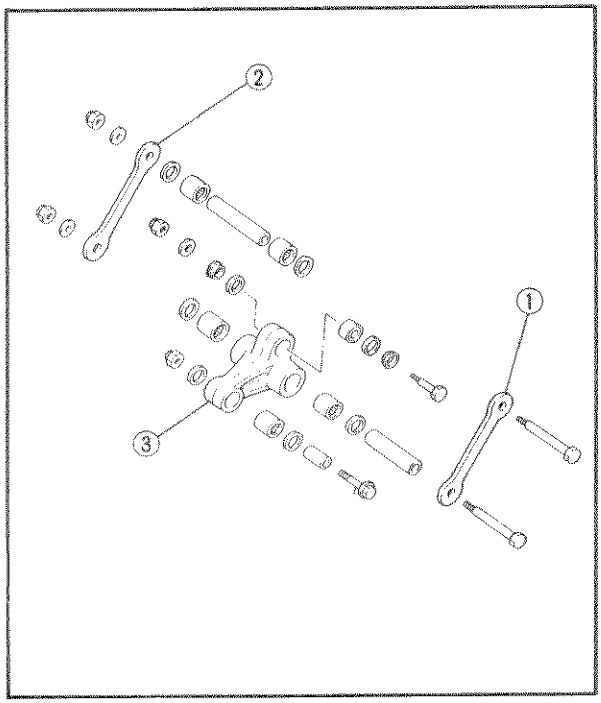
   Wear/Bents/Damage → Replace.
   - Swingarm

   Crack/Damage → Replace.
3. Inspect:
   - Connecting rod (left) ①
   - Connecting rod (right) ②
   - Relay arm ③

   Damage → Replace.
   - Bearings

   Pitting/Damage → Replace.
   - Oil seals
   - Inner collars

   Damage → Replace.

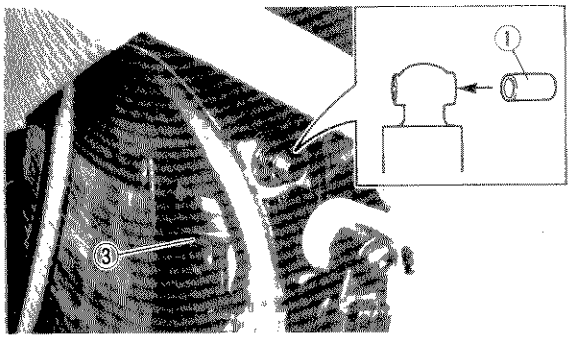


INSTALLATION

Reverse the "REMOVAL" procedure.
Note the following points.

1. Lubricate:
   - Bearings
   - Oil seals
   - Collars

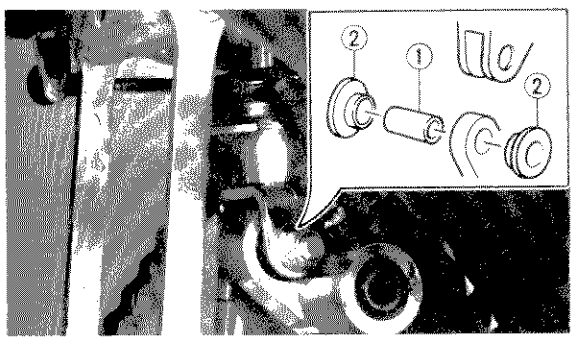
Lithium-soap base grease



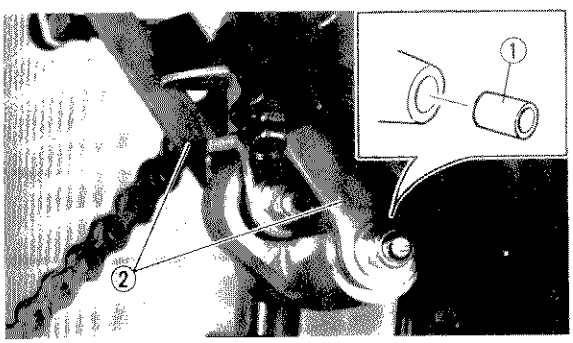
Rear shock absorber

1. Install:
   - Collars ①
   - Spacers ②
   - Rear shock absorber ③

Bolt (rear shock abosorber — upper):
40 Nm (4.0 m · kg, 29 ft · lb)
Bolt (rear shock absorber — lower):
40 Nm (4.0 m · kg, 29 ft · lb)

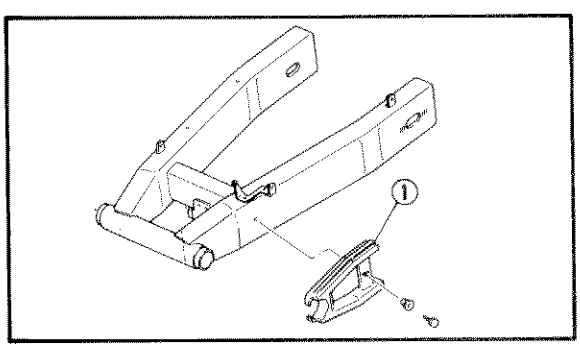


NOTE:
Lift up the rear wheel to install the rear shock absorber.



2. Install:
   - Collar ①
   - Connecting rod ②

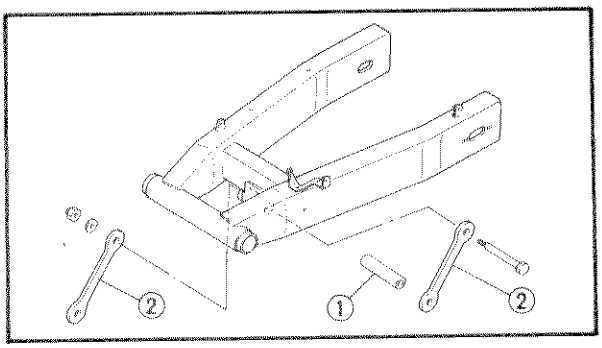
Bolt (connecting rod — lower):
40 Nm (4.0 m · kg, 29 ft · lb)



Swingarm

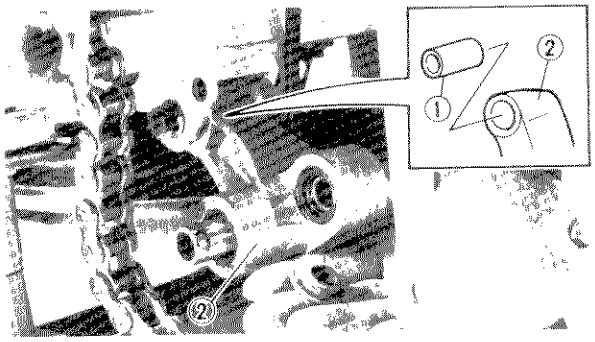
1. Install:
   - Chain guide ①

Bolt (chain guide):
5 Nm (0.5 m · kg, 3.6 ft · lb)



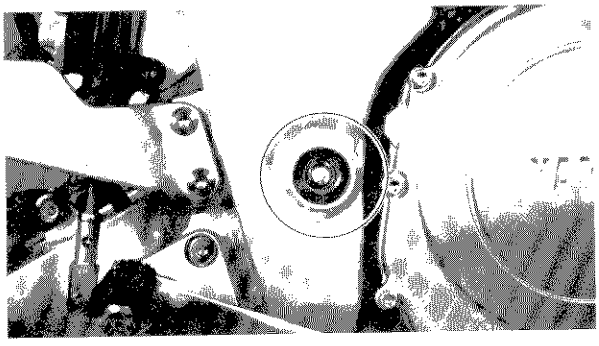
2. Install:
- Collar ①
- Connecting rod (left and right) ②

	Nut (connecting rod): **40 Nm (4.0 m · kg, 29 ft · lb)**



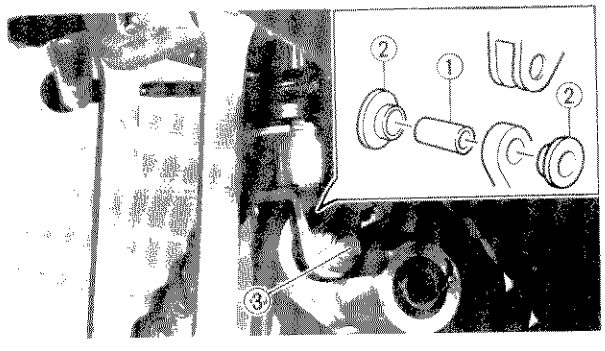
3. Install:
- Collar ①
- Relay arm ②

	Nut (relay arm): **40 Nm (4.0 m · kg, 29 ft · lb)**



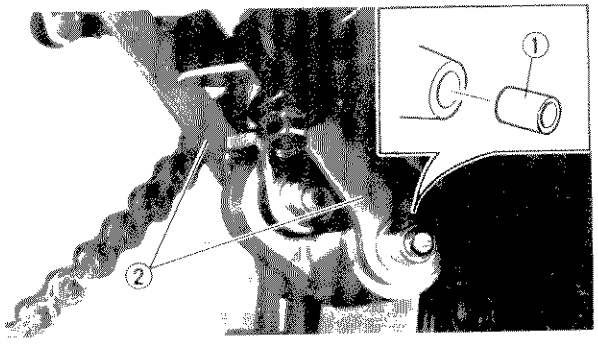
4. Install:
- Swingarm

	Nut (pivot shaft): **90 Nm (9.0 m · kg, 65 ft · lb)**



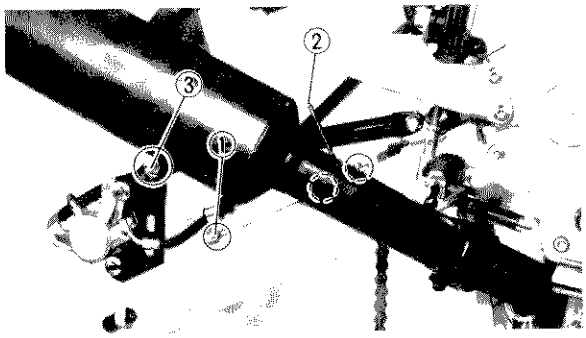
5. Install:
- Collar ①
- Spacer ②
- Bolt (rear shock absorber — lower) ③

	Nut (rear shock absorber — lower): **40 Nm (4.0 m · kg, 29 ft · lb)**



6. Install:
- Collar ①
- Connecting rod ②

	Nut (connecting rod): **40 Nm (4.0 m · kg, 29 ft · lb)**



7. Install:
   - Clamp (brake hose) ①
   - Holder (brake hose) ②
   - Bolt
   - Nut (tension bar – front) ③
   - Cotter pin

	Nut (tension bar – front): 23 Nm (2.3 m · kg, 17 ft · lb)

⚠ WARNING:

- **Always use a new cotter pin.**
- **Proper hose routing is essentiel to issure safe motorcycle operation. Refer to "CABLE ROUTING" in the CHAPTER 2.**

8. Install:
   - Rear wheel

   Refer to the "REAR WHEEL – INSTALLATION" section.

	Nut (rear axle): 107 Nm (10.7 m · kg, 77 ft · lb) Bolts (brake caliper): 35 Nm (3.5 m · kg, 25 ft · lb)

9. Adjust:
   - Drive chain slack

   Refer to the "DRIVE CHAIN SLACK ADJUSTMENT" section in the CHAPTER 3.

	Drive chain slack: 20 ~ 30 mm (0.8 ~ 1.2 in)

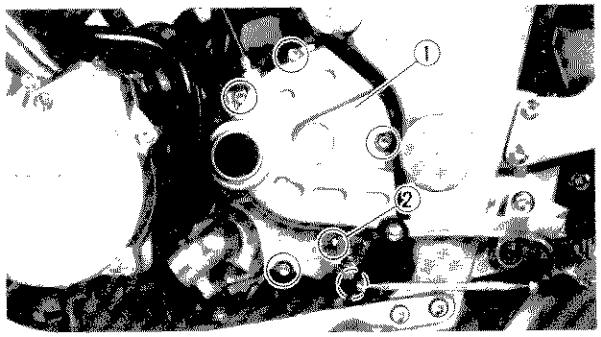
DRIVE CHAIN AND SPROCKET

REMOVAL

1. Place the motorcycle verticaly on a level place.

⚠ WARNING:

Securely support the motorcycle so there is no danger of it falling over.

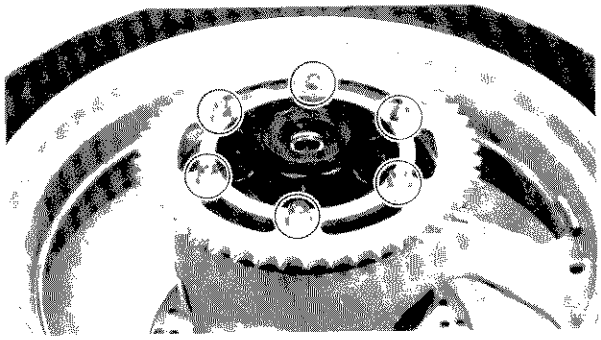


2. Remove:
   - Bolt (shift arm) ①

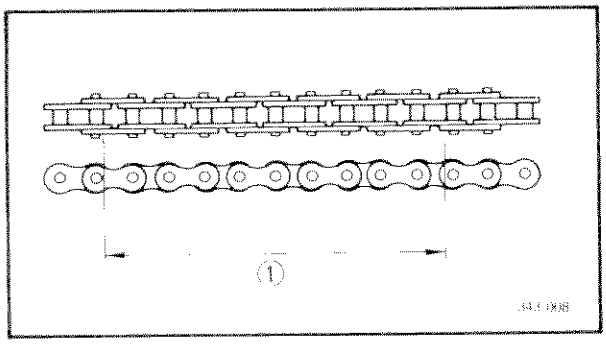
   Pull out the shift arm.
3. Remove:
   - Crankcase cover (left) ②
   - Nut (drive sprocket)
   - Lock washer
   - Drive sprocket

   Refer to the "ENGINE – REMOVAL" section in the CHAPTER 4.
4. Remove:
   - Rear wheel
   - Swingarm
   - Drive chain

   Refer to the "REAR WHEEL – REMOVAL" and REAR SHOCK ABSORBER AND SWINGARM – REMOVAL".



5. Remove:
   - Driven sprocket



INSPECTION AND CLEANING

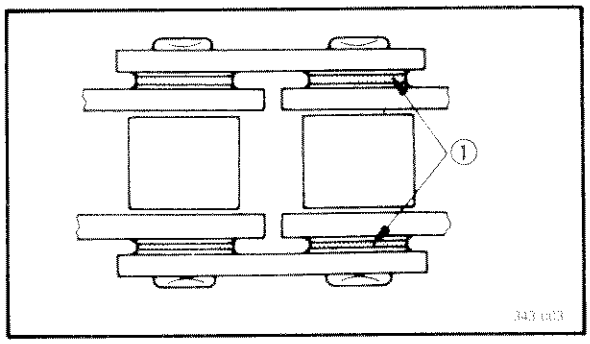
1. Measure:
   - Drive chain wear ①
   - Length of 10 links

   Over specified limit → Replace the drive chain, drive sprocket and driven sprocket as a set.

Drive chain wear limit (10 links):
150.1 mm (5.91 in)

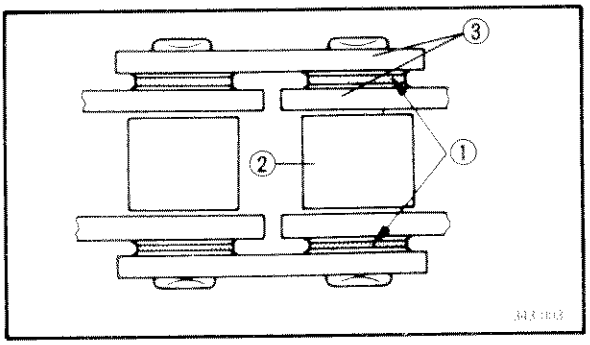
2. Clean:
   - Drive chain

Driven chain cleaner: Kerosene



⚠ CAUTION:

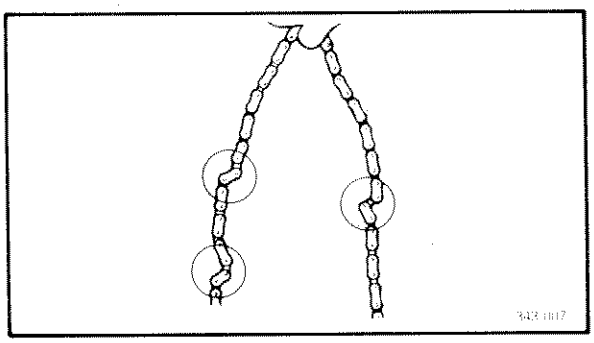
- **Do not use steam cleaning, high-pressure washes, and certain solvent of O-ring ① damage may occur.**
- **This machine has a drive chain with small rubber O-rings ① between the chain plates. Steam cleaning, high-pressure washes, and certain solvent can damage these O-rings. Use only kerosene to clean the drive chain.**



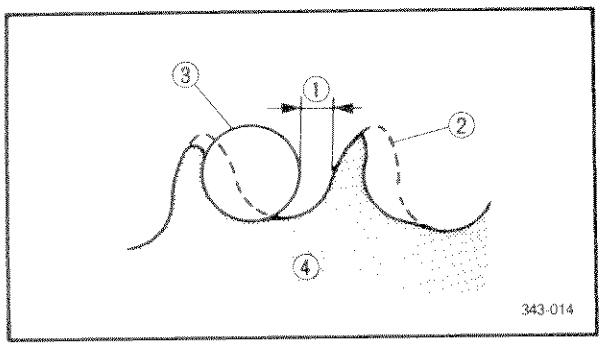
3. Inspect:
   - O-rings ① (drive chain)
     Damage → Replace drive chain.
   - Rollers ②
   - Side plates ③
     Damage/Wear → Replace drive chain.

4. Lubricate:
   - Drive chain

Drive chain lubricant: SAE 30 ~ 50 Motor oil



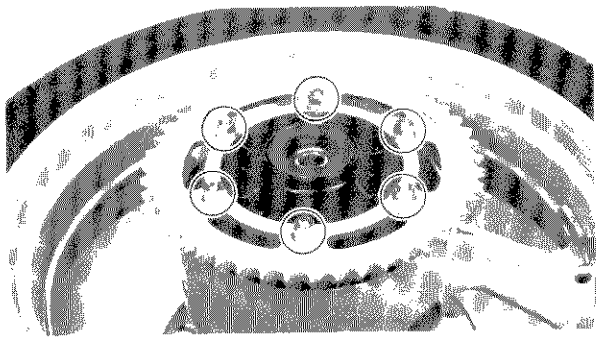
5. Inspect:
   - Drive chain stiffness.
     Stiff → Clean and lubricate or replace.



6. Inspect:
   - Drive sprocket
   - Driven sprocket

   More than 1/4 teeth ① wear → Replace sprocket.
   Bent teeth → Replace sprocket.

② Correct
③ Roller
④ Sprocket



Driven sprocket replacement steps:
- Remove the self-locknuts ① , bolts ② and driven sprocket ③ .
- Clean the hub, especially on the surfaces contact with the sprocket, using clean cloth.
- Install the new driven sprocket.

NOTE:
Tighten the bolts in stage, using a crisscross pattern.

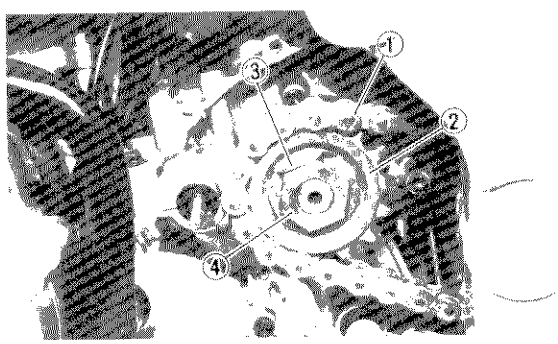
Self-locknut (driven sprocket): 32 Nm (3.2 m · kg, 2.3 ft · lb)

INSTALLATION

Reverse the removal procedure.
Note the following points.

1. Install:
   - Rear wheel
   - Drive chain

   Refer to "REAR WHEEL" section.



2. Install:
   - Drive chain ①
   - Drive sprocket ②
   - Lock washer ③
   - Nut (drive sprocket) ④

Nut (drive sprocket): 60 Nm (6.0 m · kg, 43 ft · lb)

NOTE:
When tightening the nut (drive sprocket), apply the rear brake pedal and transmission gear to the 5th position.

⚠ WARNING:
Always use a new lock washer.

3. Install:
   - Collar
   - Crankcase cover (left)
   - Shim arm

Bolts (crankcase cover — left):
10 Nm (1.0 m · kg, 7.2 ft · lb)
Bolt (shift arm):
10 Nm (1.0 m · kg, 7.2 ft · lb)

NOTE:
Align the punch mark on shift shaft with the slot of the shift arm.

4. Adjust:
   - Drive chain slack
     Refer to the "DRIVE CHAIN SLACK ADJUSTMENT" section in the CHAPTER 3.

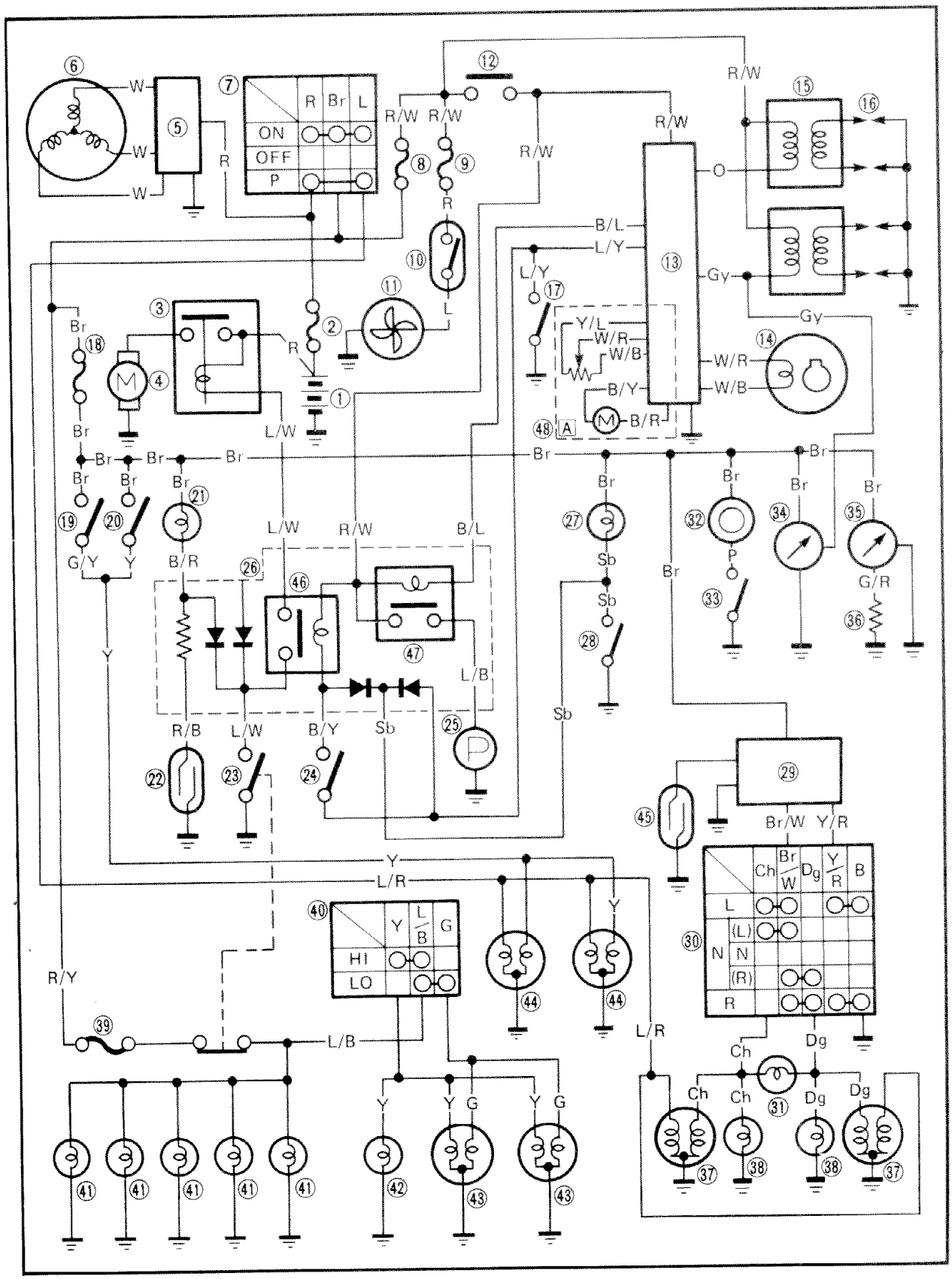
Drive chain slack:
20 ~ 30 mm (0.8 ~ 1.2 in)

⚠ CAUTION:
Too small chain slack will overload the engine and other vital parts; keep the slack within the specified limits.

⚠ WARNING:
Always use a new cotter pin on the axle nut.

ELECTRICAL

FZR600W/WC CIRCUIT DIAGRAM



- Turn the main switch to "ON".
- Check for voltage (12V) on the "Brown" lead at bulb socket connector.

OUT OF SPECIFICATION → Wiring circuit from main switch to bulb socket connector is faulty, repair.

MEETS SPECIFICATION (12V) → This circuit is good.

5. "OIL LEVEL" indicator light does not come on when engine oil level is low.

1. Bulb and bulb socket

Check the bulb and bulb socket for continuity. Refer to the "CHECKING OF BULBS" section.

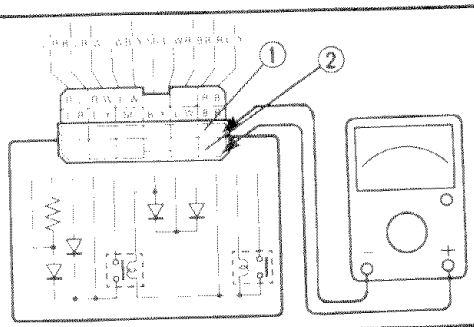
NO CONTINUITY → Bulb and/or bulb socket are faulty, replace.

CONTINUITY

2. Resistor

- Remove the relay assembly from the wire-harness.
- Connect the pocket tester (Ω x 1) to the relay assembly terminal.

Tester (+) lead → Black/Red terminal ①
Tester (-) lead → Red/Black terminal ②



- Check the resistor for continuity.

NO CONTINUITY → Resistor is faulty, replace relay assembly.

CONTINUITY

3. Oil level switch

- Drain the engine oil and remove the oil level switch from the oil pan.
- Connect the pocket tester (Ω x 1) to the oil level gauge.

Tester (+) lead → Red/Black ① lead
Tester (−) lead → Oil level switch body

① Battery
② Fuse (main)
③ Starter relay
④ Starter motor
⑤ Rectifier/Regulator
⑥ A.C. generator
⑦ Main switch
⑧ Fuse (ignition)
⑨ Fuse (fan)
⑩ Thermo switch
⑪ Fan motor
⑫ "ENGINE STOP" switch
⑬ Ignitor unit
⑭ Pickup coil
⑮ Ignition coil
⑯ Spark plug
⑰ Side stand switch
⑱ Fuse (signal)
⑲ Front brake switch
⑳ Rear brake switch
㉑ "OIL LEVEL" indicator light
㉒ Oil level switch
㉓ "START" switch
㉔ Clutch switch
㉕ Fuel pump
㉖ Relay assembly
㉗ Neutral indicator light
㉘ Neutral switch
㉙ Flasher relay
㉚ "TURN" switch
㉛ "TURN" indicator light
㉜ Horn
㉝ "HORN" switch
㉞ Tachometer
㉟ Engine temperature gauge
㊱ Thermo unit
㊲ Front position light/Front flasher light
㊳ Rear flasher light
㊴ Fuse (head)
㊵ "LIGHTS" (dimmer) switch
㊶ Meter light
㊷ "HIGH BEAM" indicator light
㊸ Headlight
㊹ Tail/brake light
㊺ Read switch
㊻ Starting circuit cut-off relay
㊼ Fuel pump relay
㊽ "EXUP" servo motor

[A] For California only

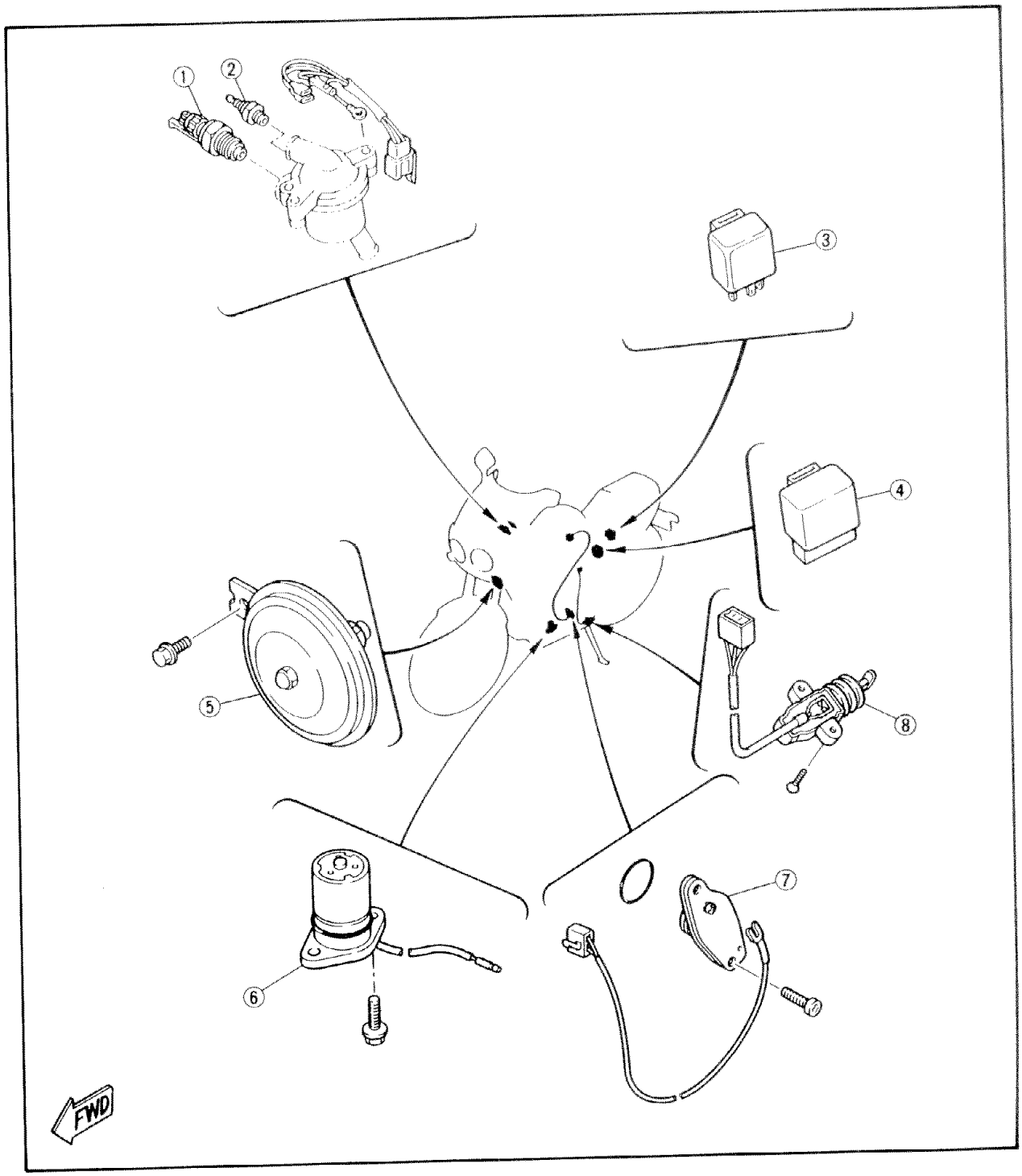
COLOR CODE

B	Black	Sb	Skyblue	L/R	Blue/Red
R	Red	Dg	Dark green	L/Y	Blue/Yellow
L	Blue	W	White	L/W	Blue/White
G	Green	B/R	Black/Red	G/R	Green/Red
O	Orange	B/L	Black/Blue	G/Y	Green/Yellow
Y	Yellow	B/Y	Black/Yellow	Y/R	Yellow/Red
P	Pink	R/Y	Red/Yellow	Br/W	Brown/White
Br	Brown	R/B	Red/Black	W/G	White/Green
Ch	Chocolate	R/W	Red/White	W/R	White/Red
Gy	Gray	L/B	Blue/Black	W/B	White/Black

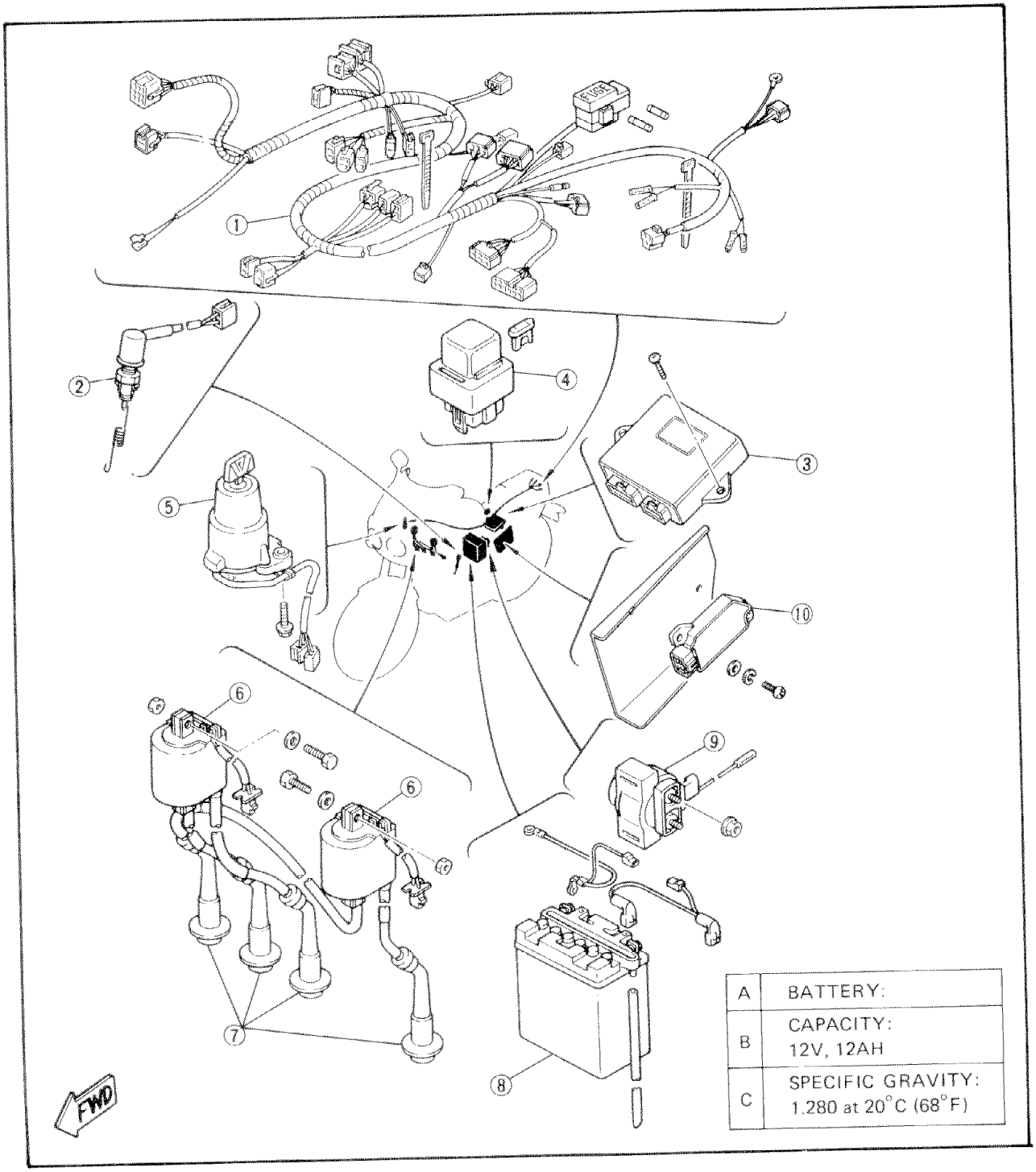
ELECTRICAL COMPONENTS

① Thermo switch
② Thermo unit
③ Flasher relay
④ Relay assembly
⑤ Horn
⑥ Oil level switch
⑦ Neutral switch
⑧ Sidestand switch

SPECIFICATIONS	RESISTANCE
IGNITION COIL:	
PRIMARY	1.8 ~ 2.2Ω at 20°C (65°F)
SECONDARY	9.6 ~ 14.4 kΩ at 20°C (68°F)
PICKUP COIL:	80 ~ 120Ω at 20°C (68°F)
STATOR COIL:	0.31 ~ 0.37Ω at 20°C (68°F)



① Wireharness
② Rear brake switch
③ Ignitor unit
④ Fuse (main)
⑤ Main switch
⑥ Ignition coil
⑦ Plug cap
⑧ Battery
⑨ Starter relay
⑩ Rectifier/Regulator



A	BATTERY:
B	CAPACITY: 12V, 12AH
C	SPECIFIC GRAVITY: 1.280 at 20°C (68°F)

CHECKING OF SWITCHES

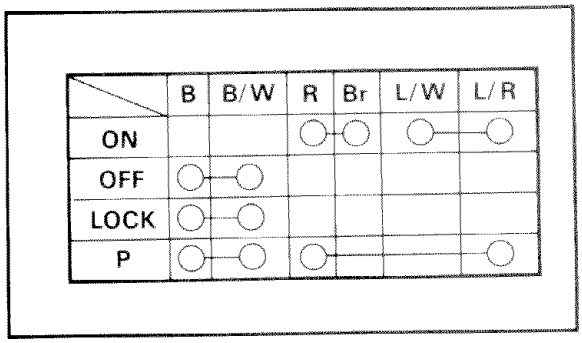
Check the switches for the continuity between the terminals to determine correct connection.

Read the following for switch inspection.

SWITCH CONNECTION AS SHOWN IN MANUAL

The manual contains a connection chart as shown left showing the terminal connections of the switches (e.g., main switch, handlebar switch, brake switch, lighting switch, etc.)

The extreme left column indicates the switch positions and the top line indicates the colors of leads connected with the terminals in the switch component.



"○—○" indicates the terminals between which there is a continuity of electricity; i.e., a closed circuit at the respective switch positions.

In this chart:
"R and Br" and "L/W and L/R" are continuous with the "ON" switch position.

"B and B/W" is continuous with the "OFF" switch position.

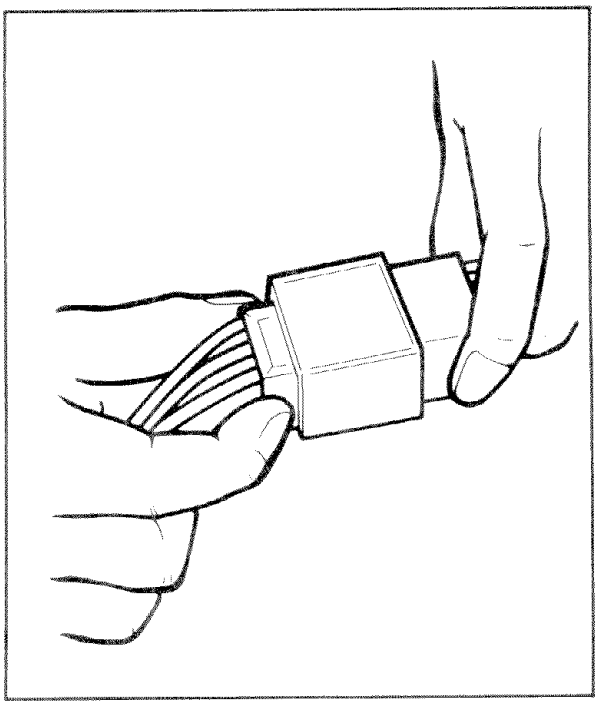
"B and B/W" is continuous with the "LOCK" switch position.

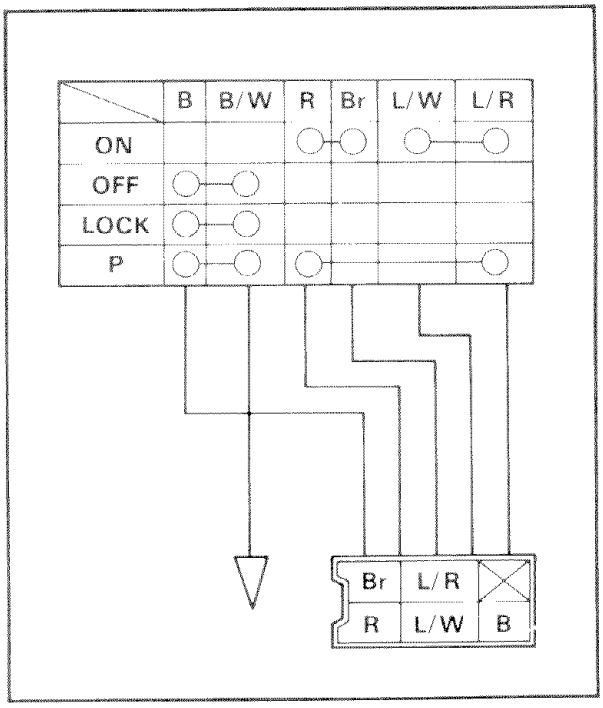
"B and B/W" and "R and L/R" are continuous with the "P" switch position.

CHECKING SWITCH FOR TERMINAL CONNECTION

Before checking the switch, refer to the connection chart as shown above and check for the correct terminal connection (closed circuit) by the color combination.

To explain how to check the switch, the main switch is taken for example in the following.





1. Disconnect the main switch coupler from the wireharness.

⚠CAUTION:

Never disconnect the main switch coupler by pulling the leads. Otherwise, leads may be pulled off the terminals inside the coupler.

2. Inspect whether any lead is off the terminal inside the coupler. If it is, repair it.

NOTE:

If the coupler is clogged with mud or dust, blow it off by compressed air.

3. Use the connection chart to check the color combination for continuity (a closed circuit). In this example, the continuity is as follows.

   "R and Br" and "L/W and L/R" are continuous with the "ON" switch position.

   "B and B/W" is continuous with the "OFF" switch position.

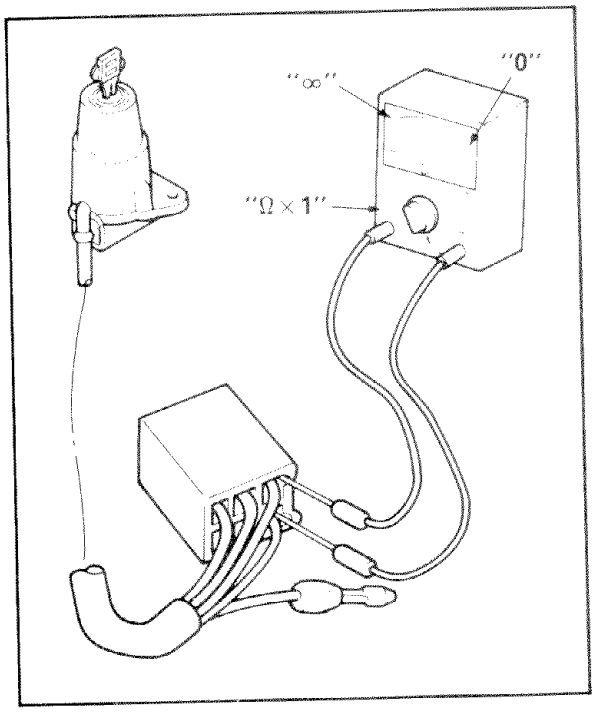
   "B and B/W" is continuous with the "LOCK" switch position.

   "B and B/W" and "R and L/R" are continuous with the "P" switch position.

   Please note that there is no continuity (an open circuit) at all for the color combinations other than the above.

4. Check the switch component for the continuity between "R and Br".

Checking steps:
- Turn the switch key to the "ON", "OFF", "LOCK", and "P" several times.
- Set the pocket tester selector to the "Ω × 1".
- Connect the tester (+) lead to the "R" lead terminal in the coupler and the (−) lead to the "Br" lead terminal.



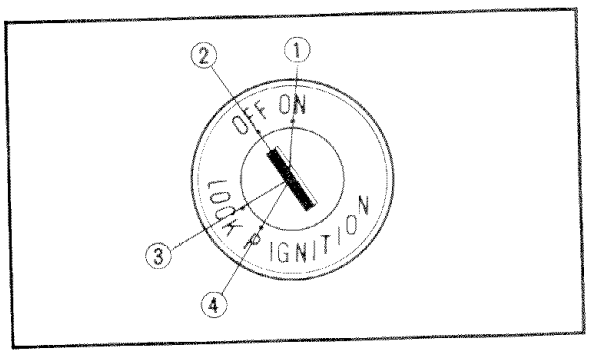
NOTE:

Use thin probes for checking the continuity. Otherwise, the probes may contact other terminals inside the coupler.

- Check the continuity between "R" and "Br" at the respective switch positions of "ON" ①, "OFF" ②, "LOCK" ③, and "P" ④. There must be continuity (the tester indicating "0") at the "ON" switch position, and there must be no continuity (the tester indicating "∞") at "OFF", "LOCK", or "P". There is something wrong between "R" and "Br" if there is no continuity at the "ON" position or if there is some continuity either at the "OFF" or "LOCK" or "P".

NOTE:

Check the switch for continuity several times.



5. Next go on to checking of the continuity between "B and B/W", "L/W and L/R", and "R and L/R" at the respective switch positions, as in the same manner mentioned above.

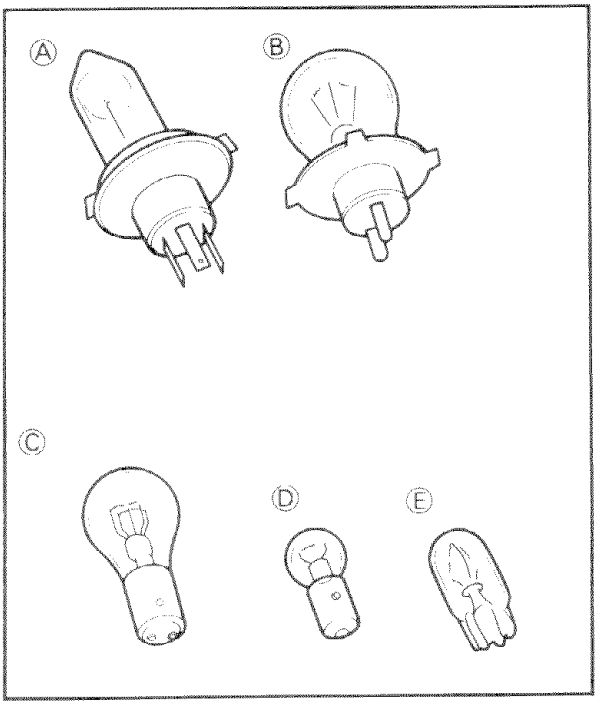
6. If there is something wrong with any one of the combinations, replace the switch component.

CHECKING OF BULBS (FOR HEADLIGHT, TAIL/BRAKE LIGHT, FLASHER LIGHT, METER LIGHT, ETC.)

Check the bulb terminal continuity for the condition of the bulb.

KINDS OF BULBS

The bulbs used in the motorcycle are classified as shown left by the shape of the bulb socket.



Ⓐ and Ⓑ are mainly used for the headlight.

Ⓒ is mainly used for the flasher light and tail/brake light.

Ⓓ and Ⓔ are mainly used for the meter light and other indicator lights.

CHECKING BULB CONDITION

1. Remove the bulb.

NOTE:

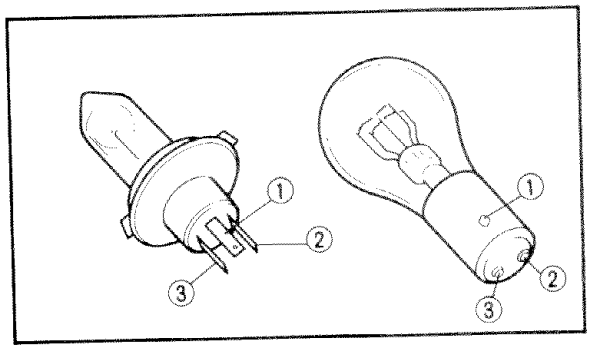
- Bulbs of the Ⓐ and Ⓑ type uses a bulb holder. Remove the bulb holder before removing the bulb itself. Most of the bulb holders for this type can be removed by turning them counterclockwise.
- Most of the bulbs of Ⓒ and Ⓓ type can be removed from the bulb sockets by pushing and turning them counterclockwise.
- Bulbs of the Ⓔ type can be removed from the bulb sockets by simply pulling them out.

⚠ CAUTION:

Be sure to hold the socket firmly when removing the bulb. Never pull the lead. Otherwise, the lead may be pulled off the terminal in the coupler.

⚠ WARNING:

Keep flammable products or your hands away from the headlight bulb while it is on. It will be hot. Do not touch the bulb until it cools down.



2. Check the bulb terminals for continuity.

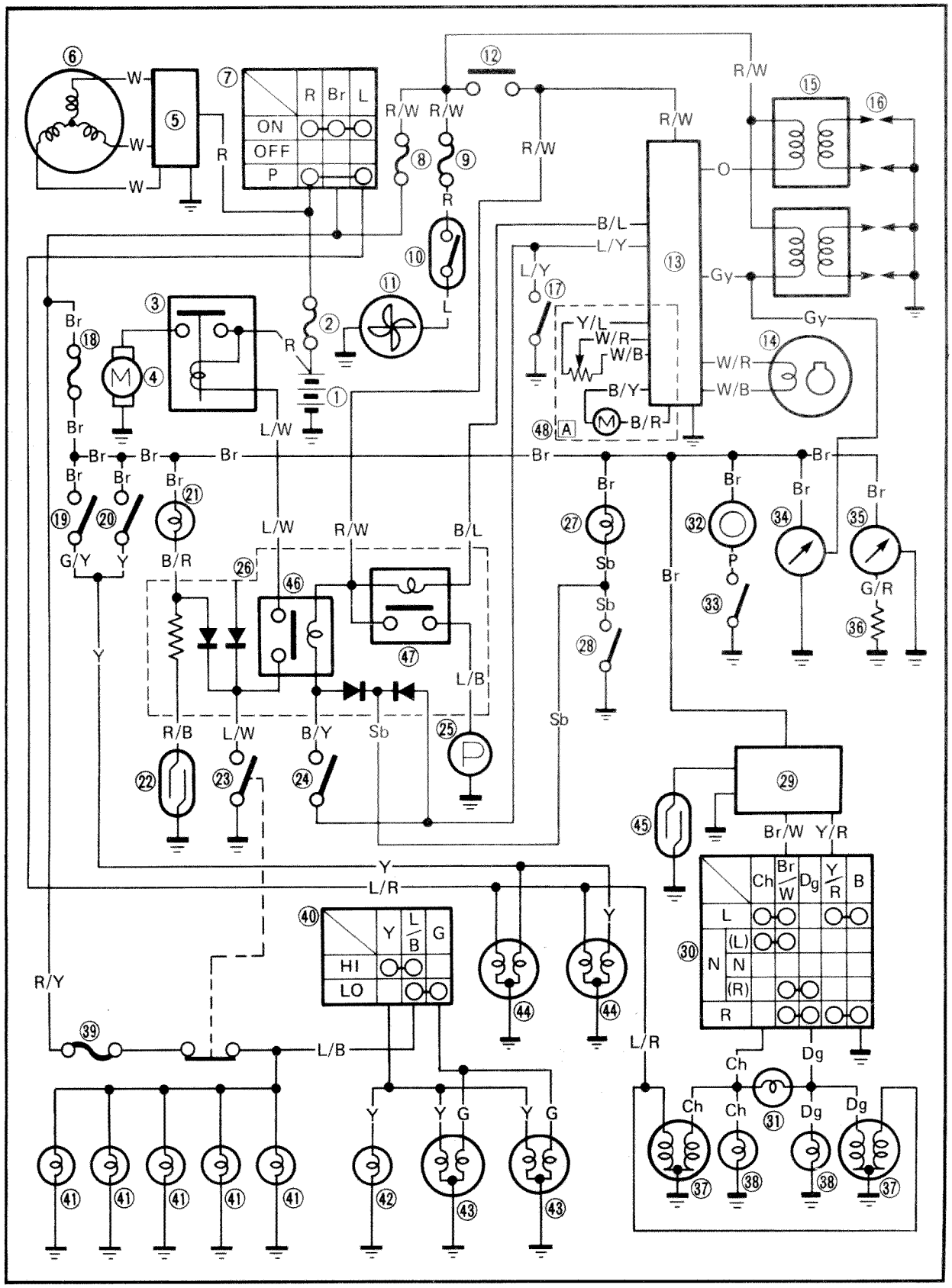
Checking steps:
- Set the pocket tester selector to the "Ω × 1".
- Connect the tester leads to the respective bulb terminals. Take for example a 3-terminal bulb as shown left. First check the continuity between the ① and ② terminals by connecting the tester (+) lead to the ① terminal and the tester (−) lead to the ② terminal. Then check the continuity between the ① and ③ terminals by connecting the tester (+) lead still to the ① terminal and the tester (−) lead to the ③ terminal. If the tester shows "∞" in either case, replace the bulb.

3. Check the bulb socket by installing a proven bulb to it. As in the checking of bulbs, connect the pocket tester leads to the respective leads of the socket and check for continuity in the same manner as mentioned above.

— MEMO —

IGNITION SYSTEM

CIRCUIT DIAGRAM

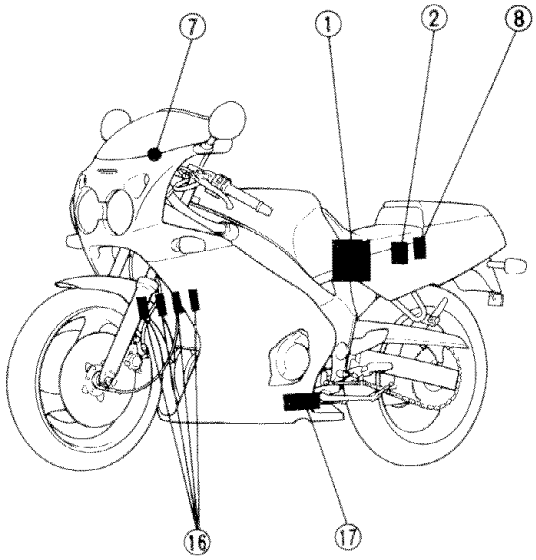


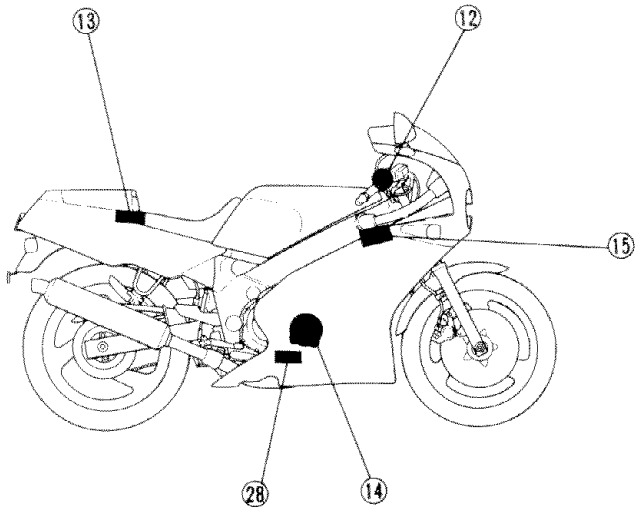
Aformentioned circuit diagram shows ignition circuit in circuit diagram.

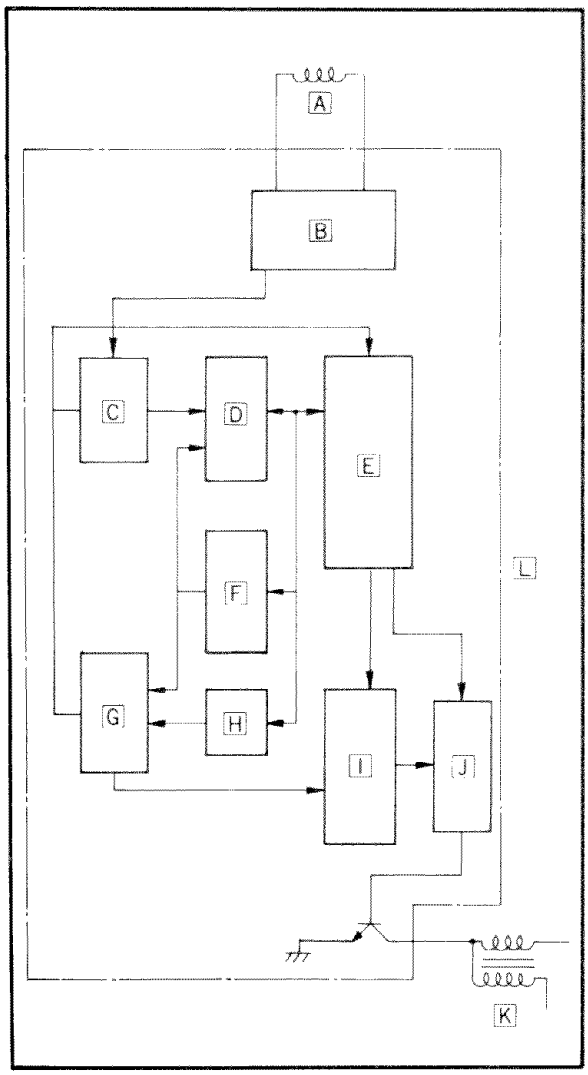
NOTE:

For the color codes, see page 8-2.

① Battery
② Fuse
⑦ Main switch
⑧ Fuse (ignition)
⑫ "ENGINE STOP" switch
⑬ Ignitor unit
⑭ Pickup coil
⑮ Ignition coil
⑯ Spark plug
⑰ Sidestand switch
㉘ Neutral switch







DIGITAL IGNITION CONTRL SYSTEM

Description

The electronic ignition that sparks the engine is computer controlled and operated by the digital microprocessor. It has a pre-programed ignition advance curve.

This programed advance curve closely matches the spark timing to the engine's ignition requirements. Only one pickup coil is needed to meet the requirements of the digital ignitor unit.

The digital ignitor also includes the control unit for the electric fuel pump.

A Pickup coil
B Wave-shape shaping circuit
C Edge detection circuit
D Latch circuit
E Microprocessor
F Free-running counter
G Comparison circuit
H Register
I Flip-flop circuit
J Driving circuit
K Ignition coil
L Digital ignitor unit

Operation

The following operations are digitally-performed by signal from the pickup coil signal:

1. Determing proper ignition timing.
2. Sensing the engine revolution speed.
3. Determing timing for switching on ignition coil (duty control).
4. Increasing ignition coil primary current for starting the engine.
5. Sensing engine stall.
6. Preventing over-revolution of the engine.

TROUBLESHOOTING

IF IGNITION SYSTEM SHOULD BECOME INOPERATIVE (NO SPARK OR INTERMITTENT SPARK)

Procedure

Check;

1. Fuse (main)
2. Battery
3. Spark plug
4. Ignition spark gap
5. Spark plug cap resistance
6. Ignition coil resistance
7. Main switch
8. "ENGINE STOP" switch
9. Neutral switch
10. Sidestand switch
11. Diode (relay assembly)
12. Pickup coil resistance
13. Wiring connection (Entire ignition system)

NOTE:

- Remove the following before troubleshooting.
  1) Seat (Front and rear)
  2) Side cowlings
  3) Side cover (left)
  4) Top cover
  5) Air filter case
- Use the following special tools in this troubleshooting.

Dynamic spark tester:
YM-34487
90890-03144

Pocket tester:
YU-03112
90890-03112

1. Fuse (main)

- Remove the fuse (main)
- Connect the Pocket Tester (Ω x 1) to the fuse (main).
- Check the fuse (main) for continuity.

NO CONTINUITY → Replace fuse (main).

CONTINUITY ↓

2. Battery

- Check the battery condition. Refer to the "BATTERY INSPECTION" section in the CHAPTER 3.

Specific gravity:
1.280 at 20°C (68°F)

INCORRECT →
- Refill battery fluid.
- Clean battery terminals.
- Recharge or replace battery.

CORRECT ↓

*

*

3. Spark plug

- Check the spark plug condition.
- Check the spark type.
- Check the spark plug gap.
  Refer to the "SPARK PLUG INSPECTION" section in the CHAPTER 3.

Standard spark plug:
CR9E (NGK), U27ESR-N (N.D.)

Spark Plug Gap:
0.7 ~ 0.8 mm (0.028 ~ 0.032 in)

INCORRECT → Repair or replace spark plug.

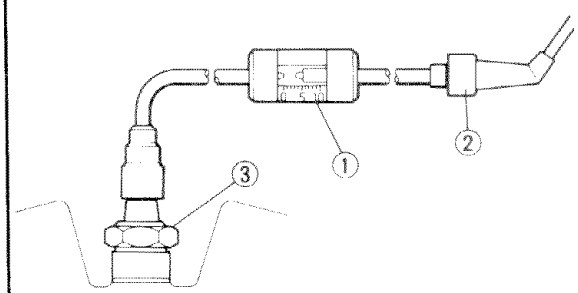
CORRECT

4. Ignition spark gap

- Disconnect the spark plug cap from spark plug.
- Connect the dynamic spark tester ① as shown.

② Spark plug cap
③ Spark plug

- Turn the main switch to "ON".



- Check the ignition spark gap.
- Start engine, and increase spark gap until misfire occurs.

Minimum spark gap:
6.0 mm (0.24 in)

MEETS SPECIFICATION → Ignition system is good.

OUT OF SPECIFICATION OR NO SPARK

*

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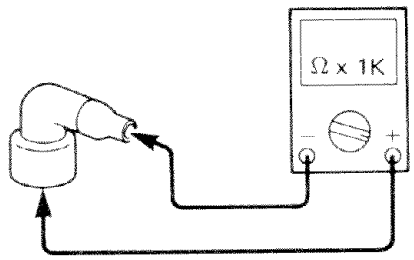
5. Spark plug cap resistance

- Remove the spark plug cap.
- Connect the pocket tester (Ω x 1k) to the spark plug cap.



- Check the spark plug cap for specificated resistance.

Spark plug cap resistance:
9 ~ 11 kΩ at 20°C (68°F)

OUT OF SPECIFICATION

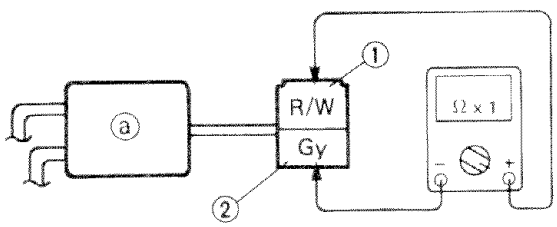
Replace spark plug cap.

MEETS SPECIFICATION

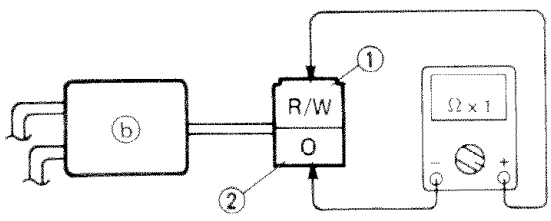
6. Ignition coil resistance

- Disconnect the ignition coil coupler from the wireharness.
- Connect the Pocket Tester (Ω x 1) to the ignition coil.

Ignition coil (right) ⓐ :
Tester (+) lead → Red/White ① terminal
Tester (-) lead → Gray ② terminal



Ignition coil (left) ⓑ :
Tester (+) lead → Red/White ① terminal
Tester (-) lead → Orange ② terminal

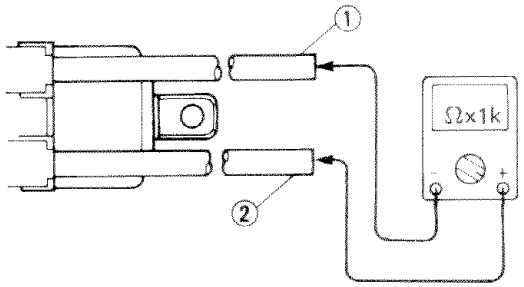


- Check the primary coil for specificated resistance.

Primary coil resistance:
1.8 ~ 2.2Ω at 20°C (68°F)

• Connect the pocket tester (Ω x 1k) to the ignition coil.

Tester (+) lead → Spark plug lead ①
Tester (-) lead → Spark plug lead ②



• Check the secondary coil for specificated resistance.

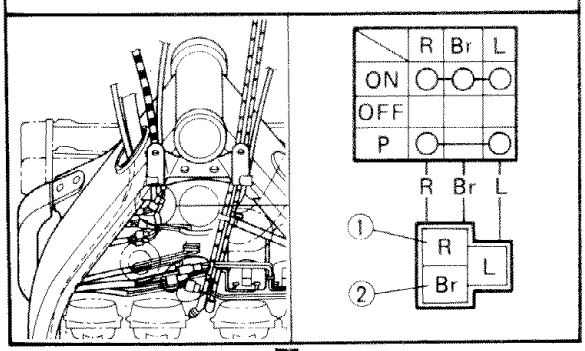
Secondary coil resistance:
9.6 ~ 14.4 kΩ at 20°C (68°F)
(Spark plug lead – Spark plug lead)

OUT OF SPECIFICATION → Replace ignition coil.

BOTH MEET SPECIFICATIONS

7. Main switch

• Disconnect the main switch coupler from the wireharness.
• Check the switch component for the continuity between "Red ① and Brown ② ". Refer to the "CHECKING OF SWITCHES" section.



INCORRECT → Replace main switch.

CORRECT

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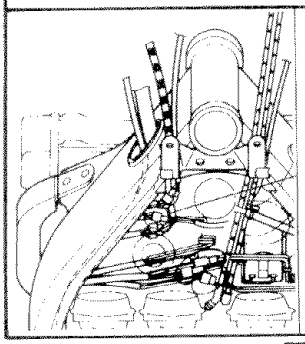
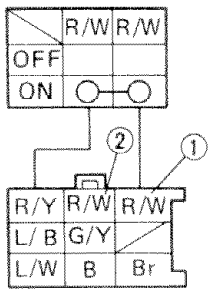
8. "ENGINE STOP" switch

- Disconnect the handlebar switch (right) lead coupler from the wire harness.
- Check the switch component for the continuity between "Red/White ① and Red/White ②". Refer to the "CHECKING OF SWITCHES" section.





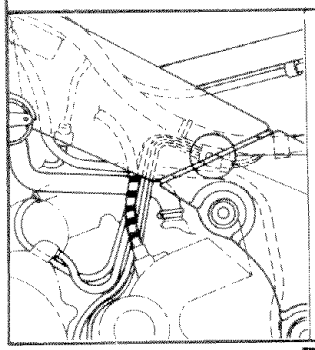
INCORRECT

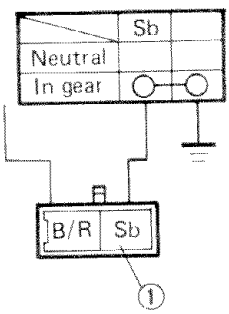
Replace handlebar switch (right).

CORRECT

9. Neutral switch

- Disconnect the neutral switch coupler from the wire harness.
- Check the switch component for the continuity between "Sky blue ① and ground". Refer to the "CHECKING OF SWITCHES" section.





INCORRECT

Replace neutral switch.

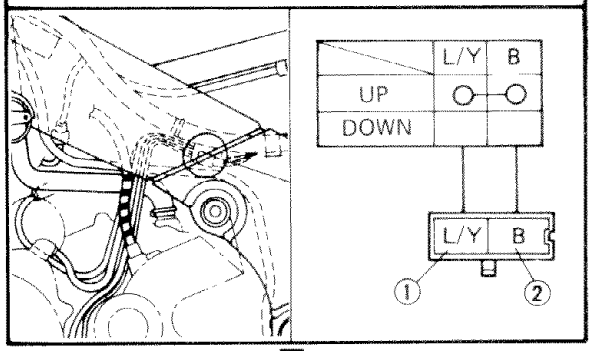
CORRECT

*

*

10. Sidestand switch

- Disconnect the sidestand switch coupler from the wireharness.
- Check the switch component for the continuity between "Blue/Yellow ① and Black ② ". Refer to the "CHECKING OF SWITCHES" section.



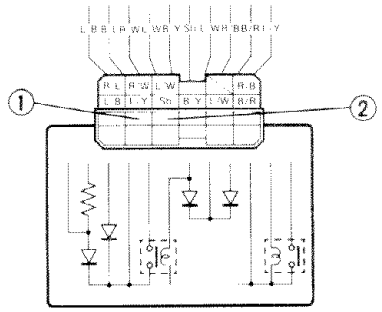
INCORRECT → Replace sidestand switch.

CORRECT

11. Diode (relay assembly)

- Disconnect the relay assembly coupler.
- Connect the pocket tester (Ω x 1) to the relay assembly terminal.

Tester (+) lead → Blue/Yellow terminal ①
Tester (-) lead → Skyblue terminal ②



NO CONTINUITY → Replace relay assembly.

CONTINUITY

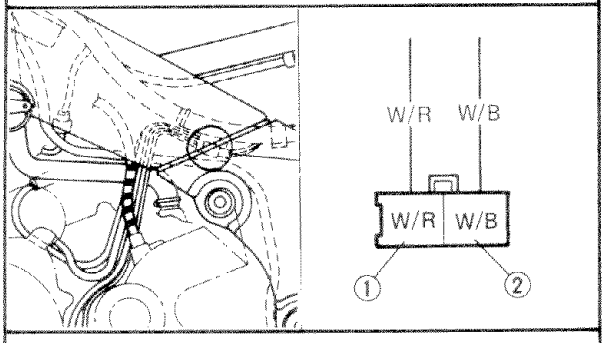
*

*

12. Pickup coil resistance

- Disconnect the A.C. magneto coupler from the wire harness.
- Connect the pocket tester (Ω x 100) to the pickup coil terminal.

Tester (+) lead → White/Red ① terminal
Tester (–) lead → White/Black ② terminal



- Check the pickup coil for specificated resistance.

Pickup coil resistance:
80 ~ 120Ω at 20°C (68°F)
(White/Red – White/Black)

OUT OF SPECIFICATION → Replace pickup coil.

MEET SPECIFICATION

13. Wiring connection

Check the entire ignition system for connections.
Refer to the "WIRING DIAGRAM" section.

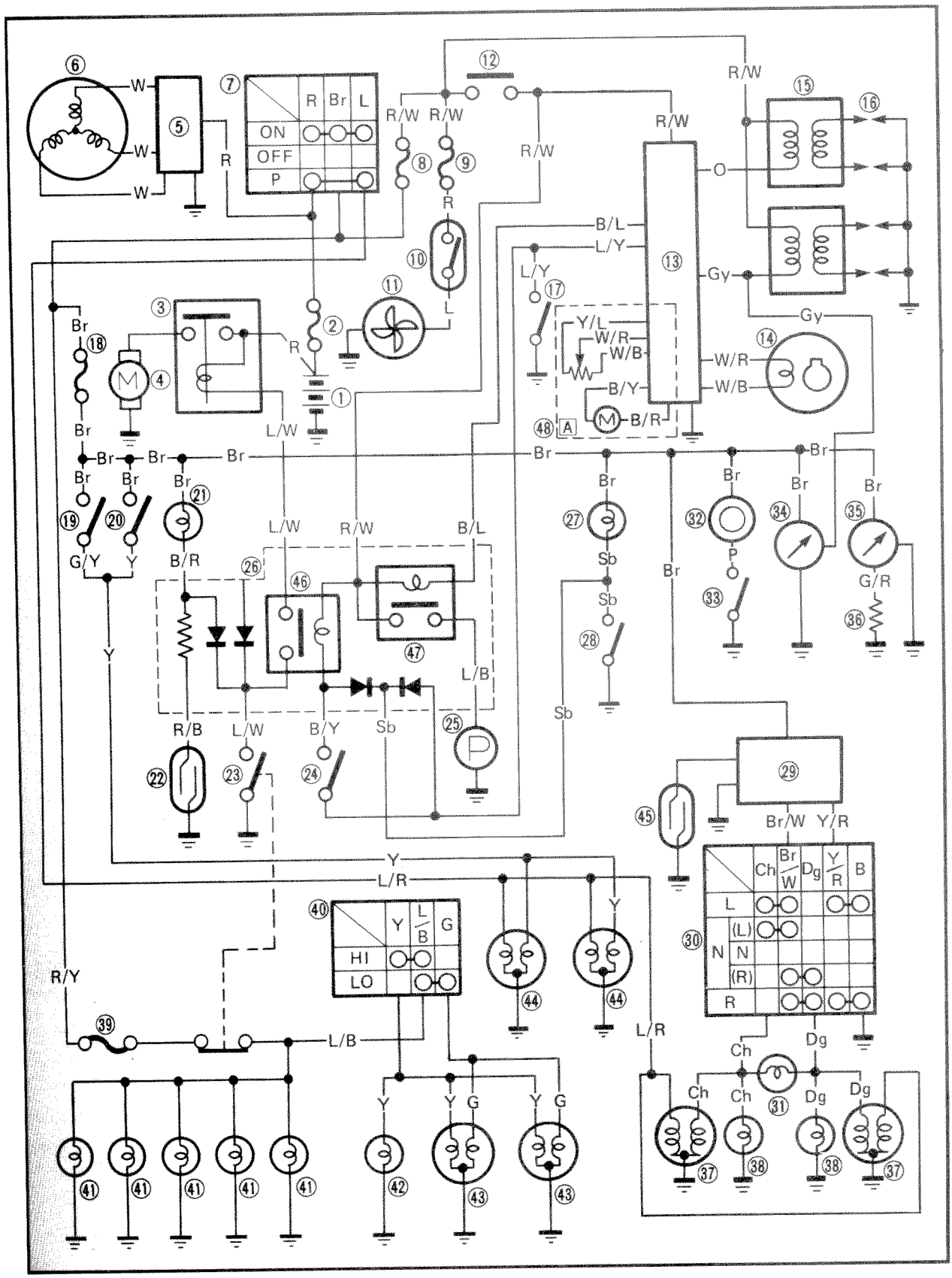
POOR CONNECTION → Correct.

CORRECT

Digital ignitor unit is faulty.
Replace the digital ignitor unit.

ELECTRICAL STARTING SYSTEM

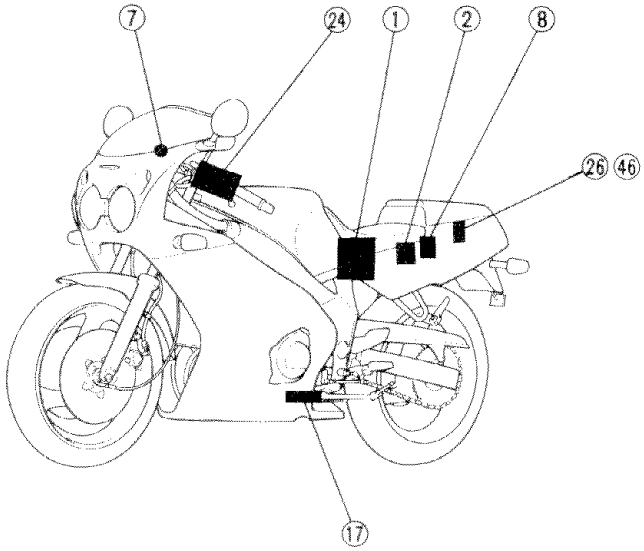
CIRCUIT DIAGRAM

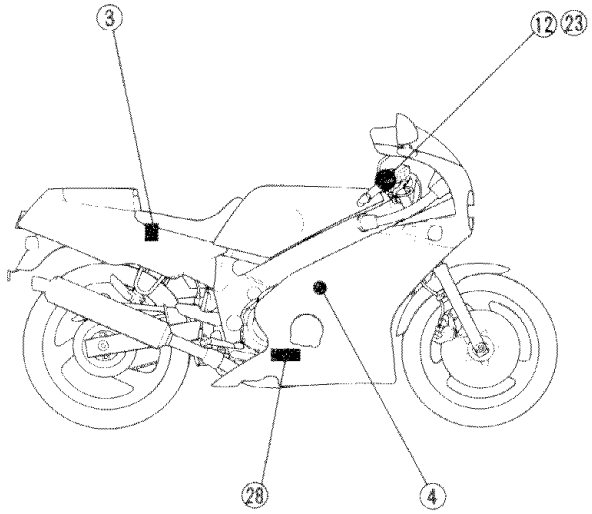


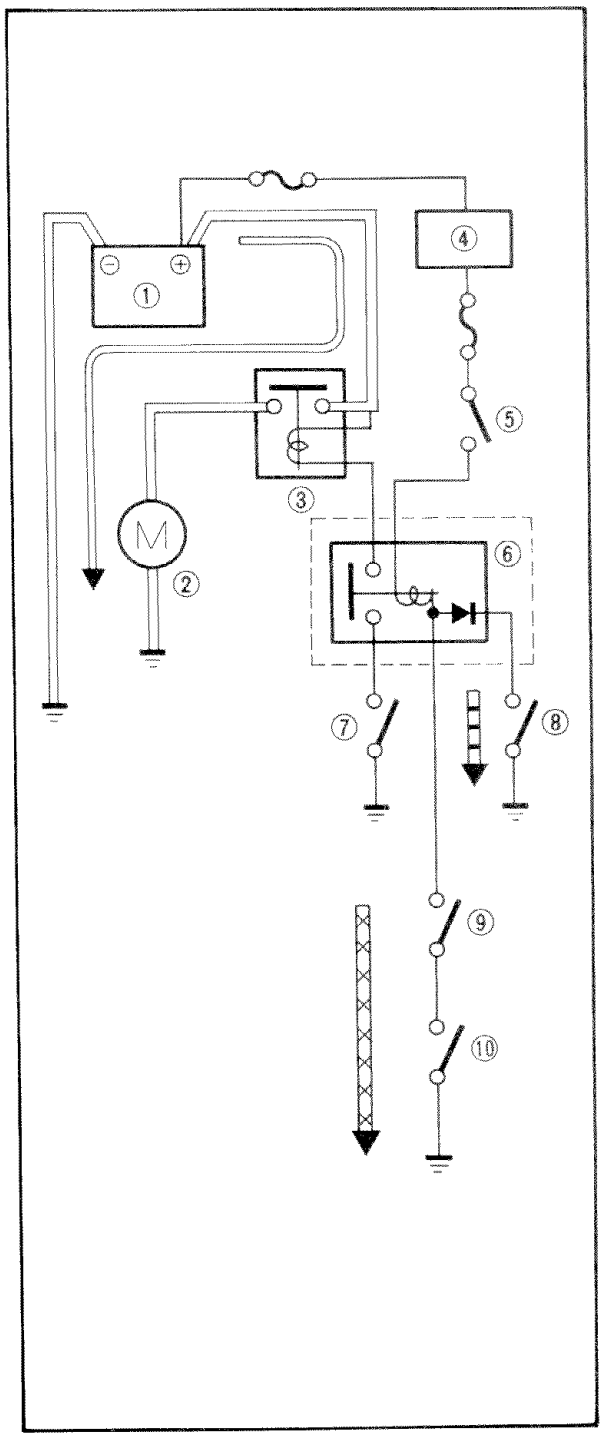
Aformentioned circuit diagram shows electrical starting circuit in circuit diagram.

NOTE:
For the color codes, see page 8-2.

① Battery
② Fuse (main)
③ Starter relay
④ Starter motor
⑦ Main switch
⑧ Fuse (ignition)
⑫ "ENGINE STOP" switch
⑰ Sidestand switch
㉓ "START" switch
㉔ Clutch switch
㉖ Relay assembly
㉘ Neutral switch
㊻ Ignition circuit cut-off relay







STARTING CIRCUIT OPERATION

The starting circuit on this model consist of the starter motor, starter relay, and the relay unit (starting circuit cut-off relay). If the engine stop switch and the main switch are both closed, the starter motor can operate only if:

> The transmission is in neutral (the neutral switch is closed).
>
> **or if**
>
> The clutch lever is pulled to the handlebar (the clutch switch is closed) and the sidestand is up (the sidestand switch is closed.)

The starting circuit cut-off relay prevents the starter from operating when neither of these conditions has been met. In this instance, the starting circuit cut-off relay is open so current cannot reach the starter motor.

When one of both of the above conditions have been met, however, the starting circuit cut-off relay is closed, and the engine can be started by pressing the starter switch.

◀□□□ WHEN THE TRANSMISSION IS IN NEUTRAL
◀XXX WHEN THE SIDESTAND IS UP AND THE CLUTCH LEVER IS PULLED IN

① Battery
② Starter motor
③ Starter relay
④ Main switch
⑤ "ENGINE STOP" switch
⑥ Starting circuit cut-off relay
⑦ "START" switch
⑧ Neutral switch
⑨ Clutch switch
⑩ Sidestand switch
[A] To ignition circuit cut-off relay

TROUBLESHOOTING

STARTER MOTOR DOES NOT OPERATE.

Procedure

Check;

1. Fuse (main)
2. Battery
3. Starter motor
4. Starter relay
5. Starting circuit cut-off relay
6. Main switch
7. "ENGINE STOP" switch
8. Neutral switch
9. Sidestand switch
10. Clutch switch
11. "START" switch
12. Wiring connection
    (Entire electric starting system)

NOTE:

Remove the following before troubleshooting.

1) Seat (front and rear)
2) Side cover
3) Side cowlings
4) Top cover
5) Air filter case

- Use the following special tool in this troubleshooting.

Pocket tester:
P/N. YU-03113
90890-03112

1. Fuse (main)

- Remove the fuse (main).
- Connect the pocket tester (Ω x 1) to the fuse (main).
- Check the fuse (main) for continuity.

NO CONTINUITY → Replace fuse (main)

CONTINUITY ↓

2. Battery

Check the battery condition.
Refer to the "BATTERY INSPECTION" section in the CHAPTER 3.

Specific gravity:
1.280 at 20°C (68°F)

INCORRECT →
- Refill battery fluid.
- Clean battery terminals.
- Recharge or replace battery.

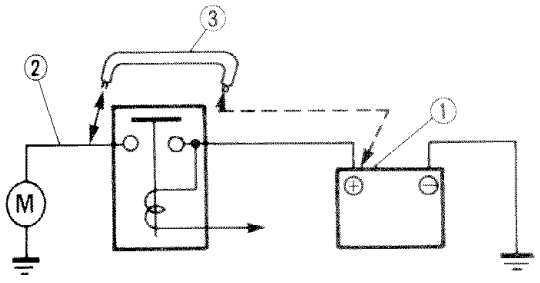
CORRECT ↓

*

*

3. Starter motor

- Connect the battery positive terminal ① and starter motor cable ② using a jumper lead ③ * as shown.



- Check the starter motor operation.

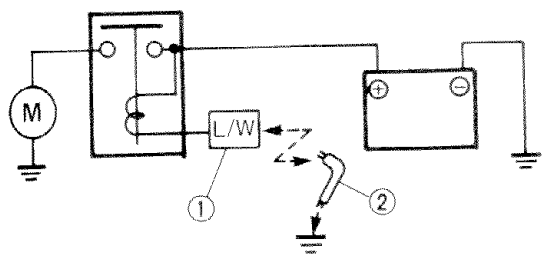
NO OPERATIVE

Repair or replace starter motor.

OPERATIVE

4. Starter relay

- Disconnect the starter relay lead.
- Ground the starter relay lead ① to the frame using the jumper lead ② as shown.



- Check the starter motor operation.

NO OPERATIVE

Replace starter relay.

OPERATIVE

5. Starting circuit cut-off relay (relay assembly)

- Disconnect the relay assembly coupler from the wireharness.
- Connect the pocket tester (Ω x 1) and battery (12V) voltage to the relay assembly coupler terminals.

*

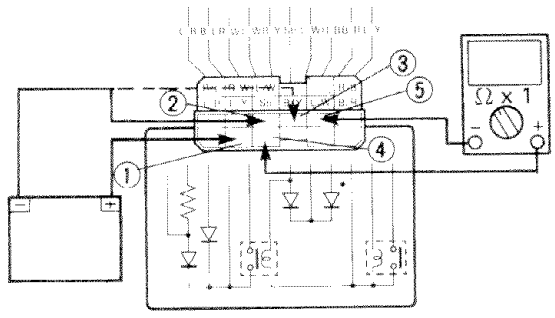
⚠ WARNING:

A wire for the jumper lead must have the equivalent capacity as that of the battery lead or more, otherwise it may cause the jumper lead to be burned.
This check is likely to produce sparks, so be sure that no flammable gas or fluid is in the vicinity.

Step 1.
Battery (+) terminal → Read/White ① terminal.
Battery (-) terminal → Black/Yellow ② terminal.

Step 2.
Battery (+) terminal → Red/White ① terminal.
Battery (-) terminal → Skyblue ③ terminal.

Tester (+) lead → Blue/White ④ terminal
Tester (-) lead → Blue/White ⑤ terminal



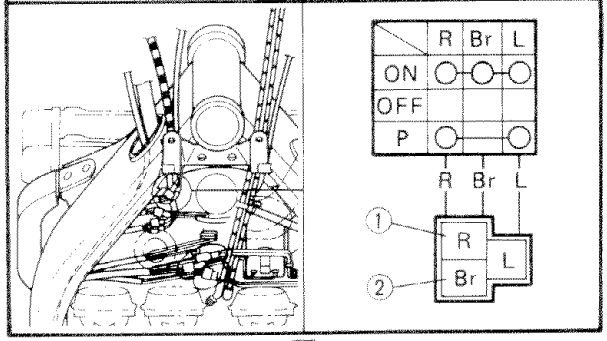
- Check the starting circuit cut-off relay for continuity.

NO CONTINUITY → Replace relay assembly.

CONTINUITY ↓

6. Main switch

- Disconnect the main switch coupler and lead from the wire harness.
- Check the switch component for the continuity between "Red ① and Brown ②". Refer to the "CHECKING OF SWITCHES" section.



INCORRECT → Replace main switch.

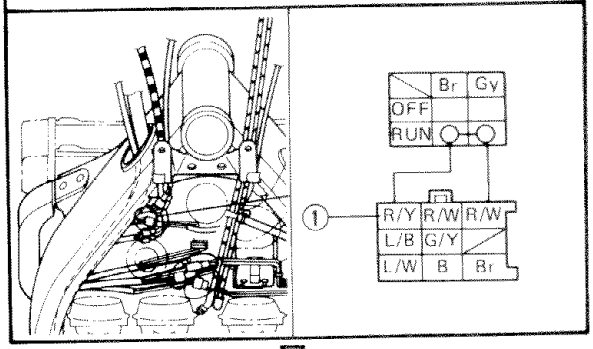
CORRECT ↓

*

*

7. "ENGINE STOP" switch

- Disconnect the handlebar switch (right) coupler from the wire harness.
- Check the switch component for the continuity between "Red/White ① and Red/White ② ". Refer to the "CHECKING OF SWITCHES" section.



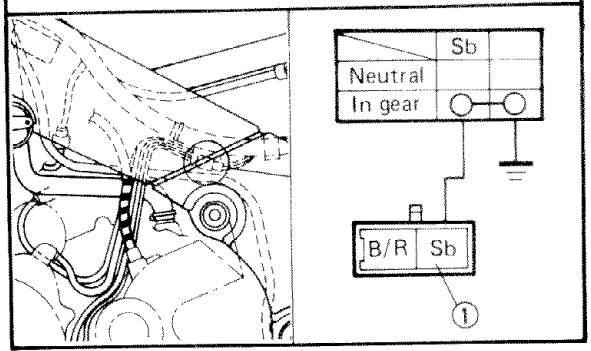
INCORRECT

Replace handlebar switch (right).

CORRECT

8. Neutral switch

- Disconnect the neutral switch coupler from the wire harness.
- Check the switch component for the continuity between "Sky blue ① and Ground". Refer to the "CHECKING OF SWITCHES" section.



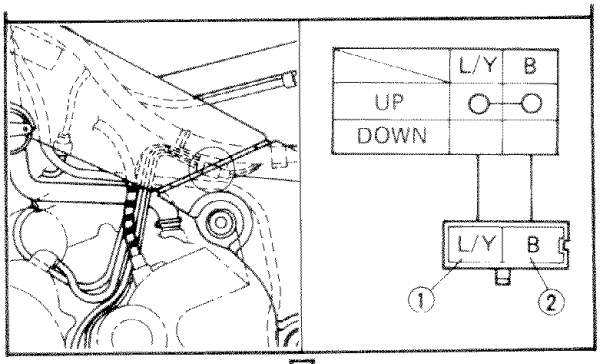
INCORRECT

Replace neutral switch.

CORRECT

9. Sidestand switch

- Disconnect the sidestand switch coupler from the wire harness.
- Check the switch component for the continuity between "Blue/Yellow ① and Black ② ". Refer to the "CHECKING OF SWITCHES" section.



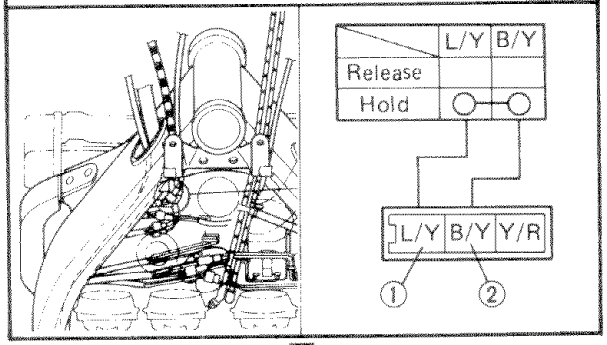
INCORRECT

Replace sidestand switch.

CORRECT

10. Clutch switch

- Disconnect the clutch switch coupler from wire harness.
- Check the switch component for the continuity between "Blue/Yellow ① and Black/Yellow ② ". Refer to the "CHECKING OF SWITCHES" section.



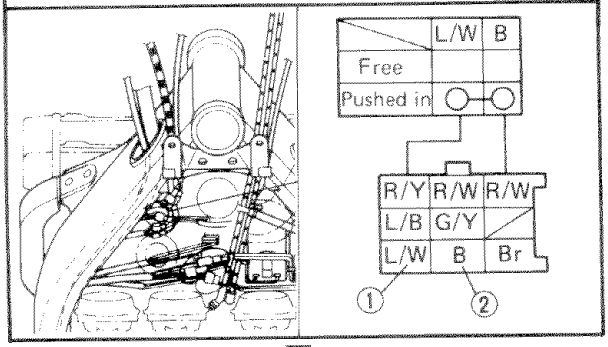
INCORRECT

Replace clutch switch.

CORRECT

11. "START" switch

- Disconnect handlebar switch (right) coupler from wire harness.
- Check the "START" switch component for the continuity between "Blue/White ① and Black ② ". Refer to the "CHECKING OF SWITCHES" section.

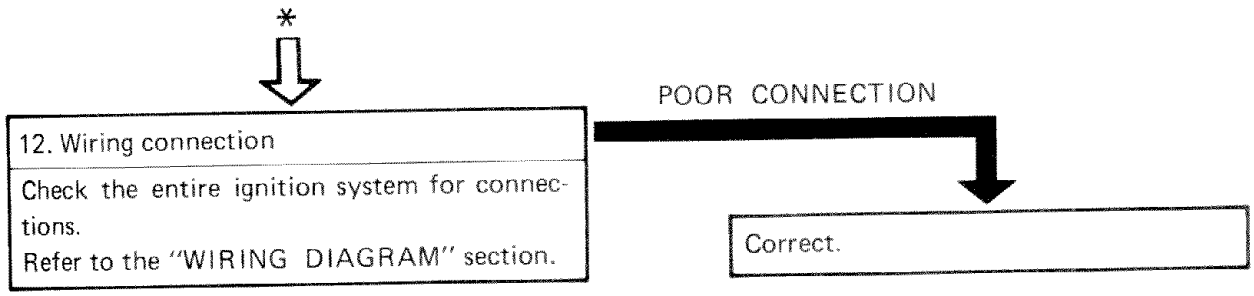


INCORRECT

Replace handlebar switch (right).

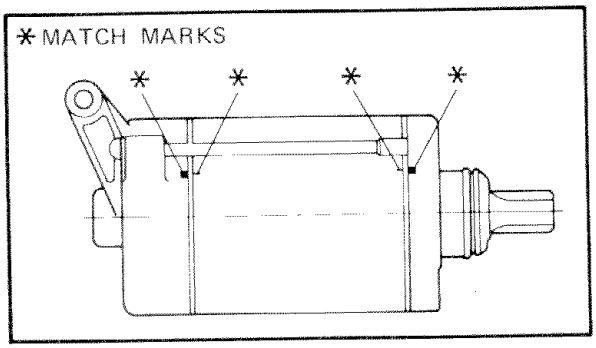
CORRECT

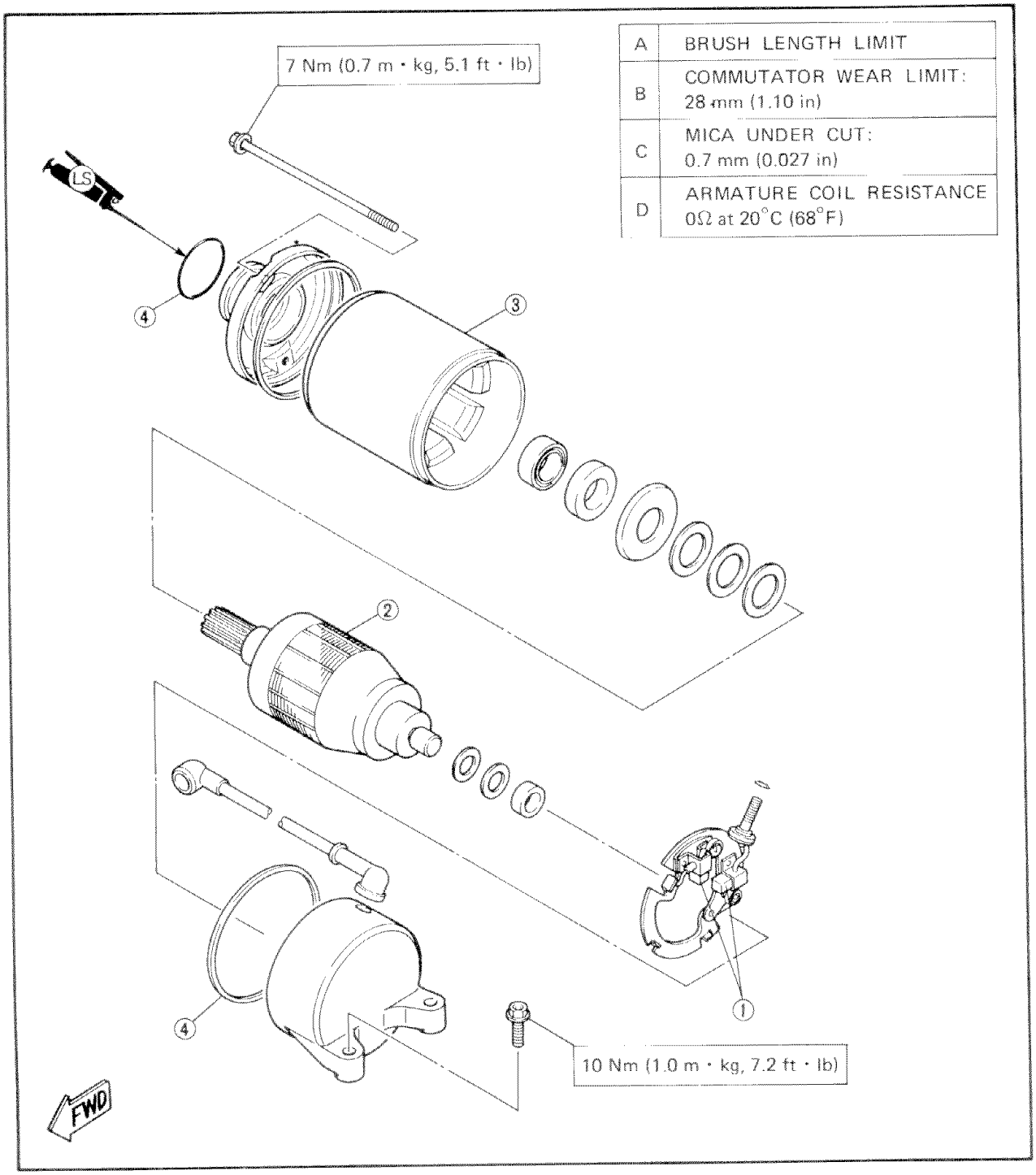
*


*
12. Wiring connection
Check the entire ignition system for connections.
Refer to the "WIRING DIAGRAM" section.
POOR CONNECTION
Correct.

STARTER MOTOR

① Brush
② Armature
③ Stator
④ O-ring



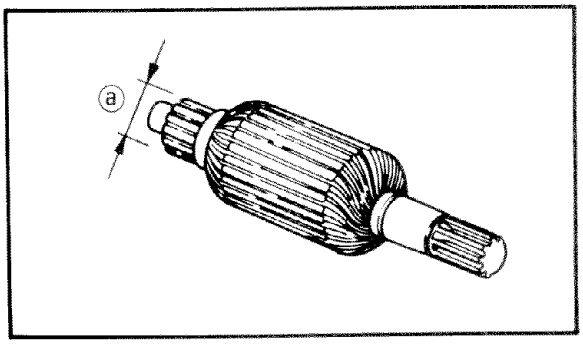


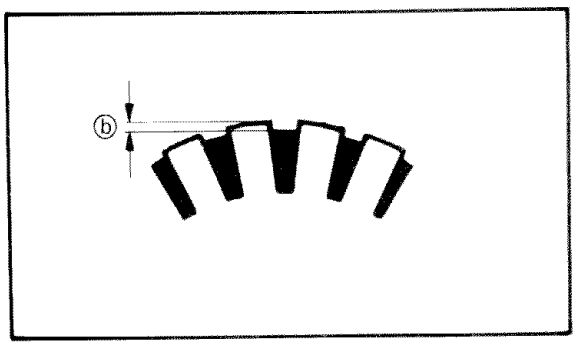
A	BRUSH LENGTH LIMIT
B	COMMUTATOR WEAR LIMIT: 28 mm (1.10 in)
C	MICA UNDER CUT: 0.7 mm (0.027 in)
D	ARMATURE COIL RESISTANCE 0Ω at 20°C (68°F)

Removal

1. Remove:
   - Starter motor

   Refer to "CHAPTER 4. ENGINE OVERHAUL – ENGINE REMOVAL" section.





Inspection and Repair

1. Inspect:
   - Commutator

   Dirty → Clean it with #600 grit sandpaper.
2. Measure:
   - Commutator diameter ⓐ

   Out of specification → Replace starter motor.

Commutator wear limit ⓐ :
28 mm (1.10 in)

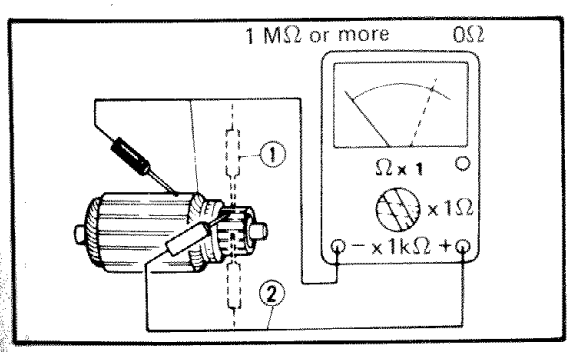
3. Measure:
   - Mica undercut ⓑ

   Out of specification → Scrape the mica to proper value use a hacksaw blade can be ground to fit.

Mica undercut ⓑ :
0.7 mm (0.027 in)

NOTE:

The mica insulation of the commutator must be undercut to ensure proper operation of commutator.



4. Inspect:
   - Armature coil (insulation/continuity)

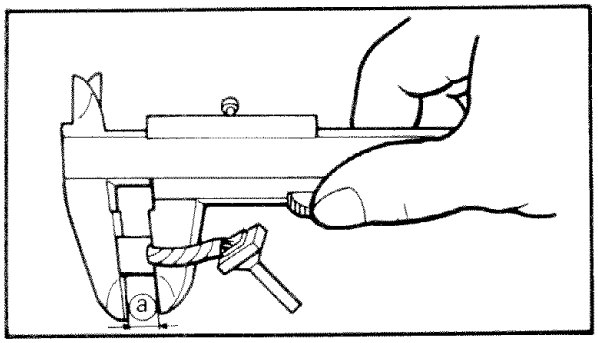
   Defects(s) → Replace starter motor.

Armature coil inspecting steps:
- Connect the Pocket Tester for continuity check ① and insulation check ② .
- Measure the armautre resistances.

Armature coil resistance:
Continuity check ① :
0Ω at 20°C (68°F)
Insulation check ② :
More than 1MΩ at 20°C (68°F)

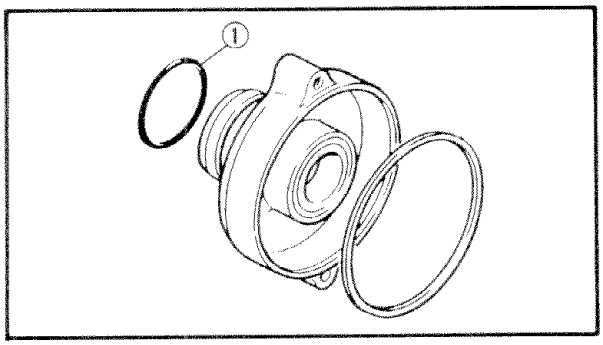
- If the resistance is incorrect, replace the starter motor.

5. Measure:
   - Brush length ⓐ
     Out of specification → Replace.

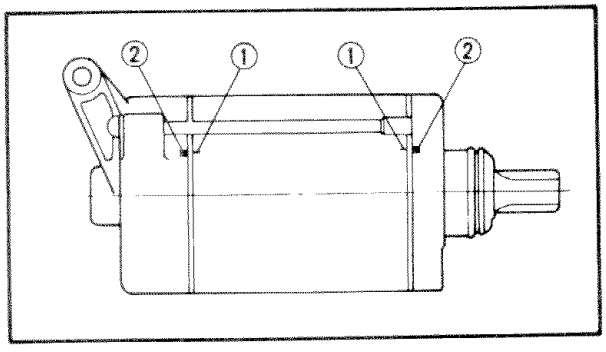


Brush length limit:
4.0 mm (0.16 in)

6. Measure:
   - Brush spring pressure
     Fatigue → Replace as a set.



7. Inspect:
   - Bearing
   - Oil seal
   - O-rings ①
     Wear/Damage → Replace.



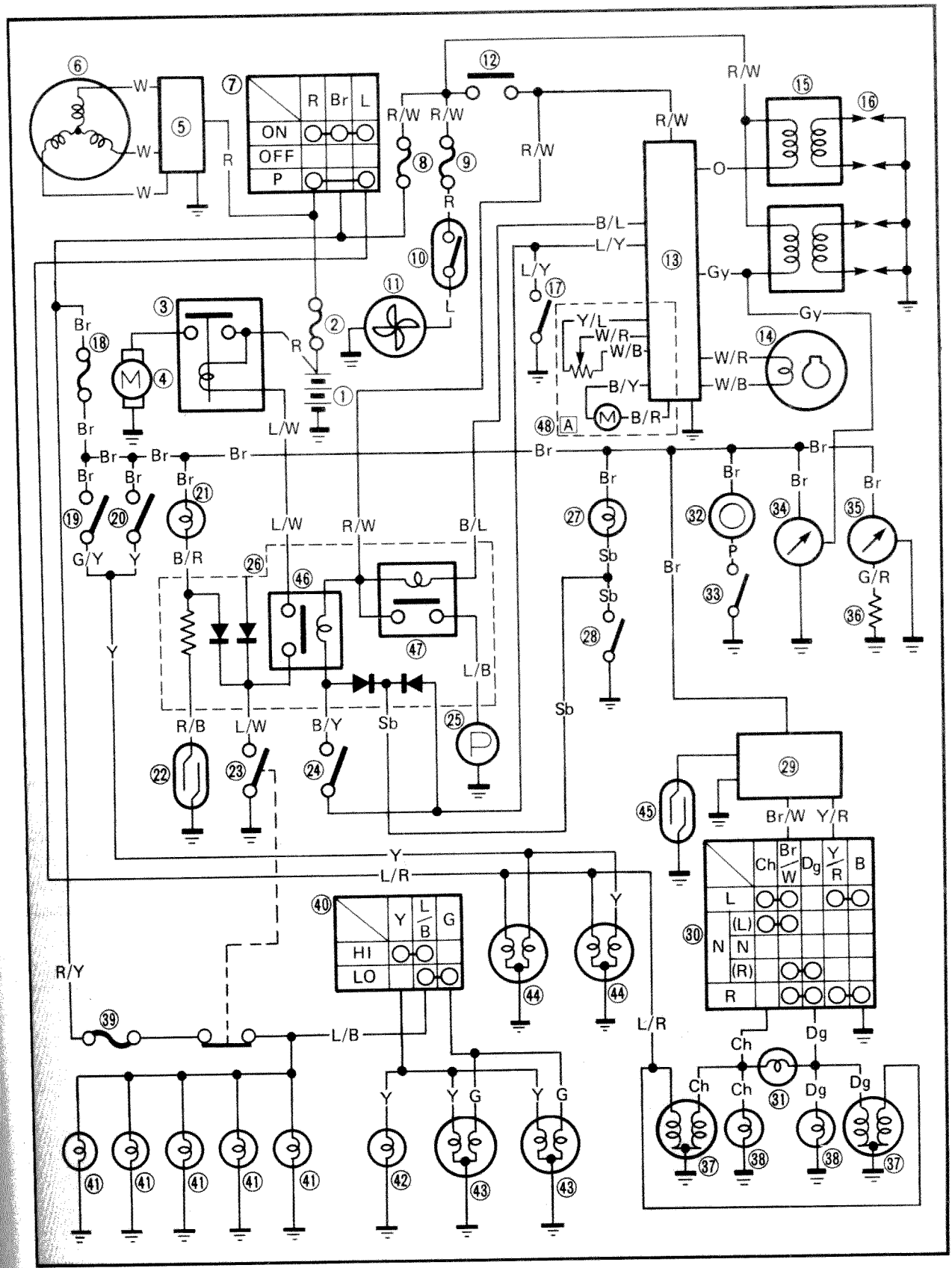
Installation

1. Install:
   - Starter motor

NOTE:
Align the match marks ① on the bracket with the match marks ② on the housing.

CHARGING SYSTEM

CIRCUIT DIAGRAM

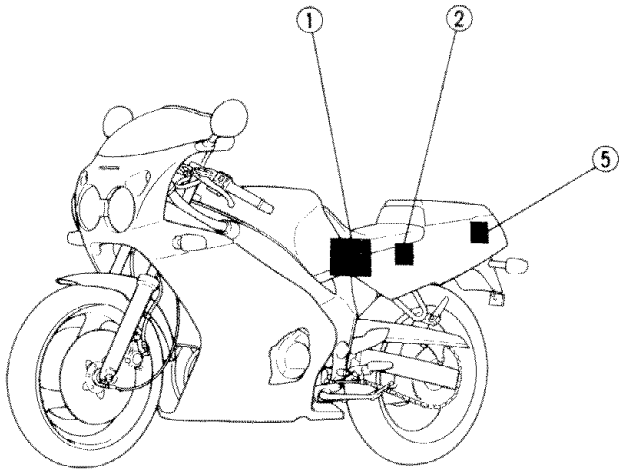


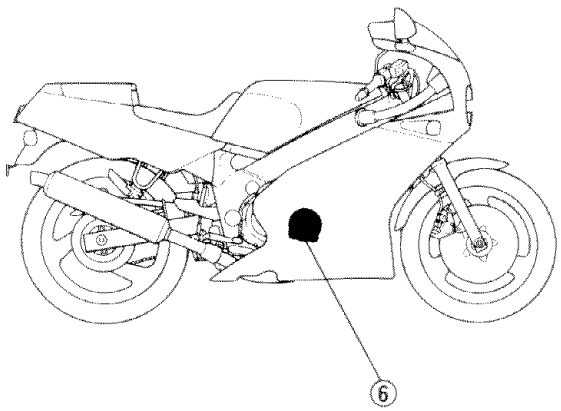
A forementioned circuit diagram show the charging circuit in the circuit diagram.

NOTE:

For the color codes, see page 8-2.

① Battery
② Fuse (main)
⑤ Rectifier/Regulator
⑥ A.C. generator





TROUBLESHOOTING

THE BATTERY IS NOT CHARGED.

Procedure

Check;

1. Fuse (main)
2. Battery
3. Charging output
4. Stator coil resistance
5. Wiring connection
   (Entire charging system)

NOTE:

- Remove the following parts before troubleshooting.
  1) Seat (front and rear)
  2) Side cover (left)
  3) Top cover
  4) Fuel tank
- Use the following special tool(s) in this troubleshooting.

Inductive tachometer:
YU-03113
90890-03113

Pocket tester:
YU-03112
90890-03112

1. Fuse (main)

- Remove the fuse (main).
- Connect the pocket tester (Ω x 1) to the fuse.
- Check the fuse for continuity. Refer to "FUSE INSPECTION" in the CHAPTER 3.

NO CONTINUITY → Fuse is faulty, replace it.

CONTINUITY ↓

2. Battery

Check the battery condition. Refer to the "BATTERY INSPECTION" section in the CHAPTER 3.

Specific gravity:
1.280 at 20°C (68°F)

INCORRECT →

- Refill battery fluid.
- Clean battery terminals.
- Recharge or replace battery.

CORRECT ↓

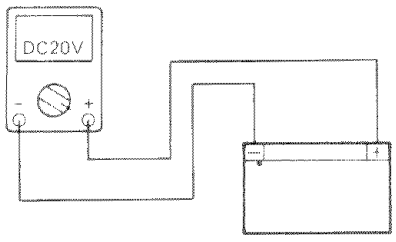
*

*

3. Charging voltage

- Connect the inductive tachometer to spark plug lead.
- Connect the pocket tester (DC20V) to the battery.

Tester (+) lead → Battery (+) terminal
Tester (-) lead → Battery (-) terminal



- Start the engine and accelerate to about, 3,000 r/min.
- Check charging voltage.

Charging voltage:
14.3 ~ 15.3V at 3,000 r/min

NOTE:
Use a full charged battery.

MEETS SPECIFICATION → Charging circuit is good.

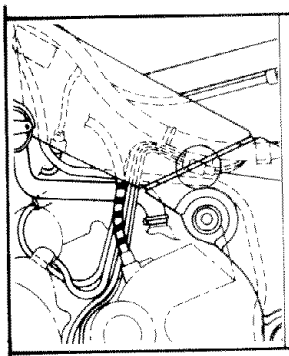
OUT OF SPECIFICATION

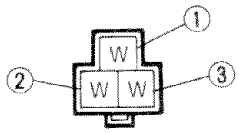
4. Stator coil resistance

- Disconnect the A.C. magneto coupler from the wire harness.
- Connect the pocket tester (Ω x 1) to the stator coil leads.

Stator coil (1)
Tester (+) lead → White lead ①
Tester (-) lead → White lead ②

Stator coil (2)
Tester (+) lead → White lead ①
Tester (-) lead → White lead ③





• Check the stator coil for specificated resistance.

Stator coil resistance:
White ① – White ②
0.31 ~ 0.37Ω at 20°C (68°F)
White ① – White ③
0.31 ~ 0.37Ω at 20°C (68°F)

OUT OF SPECIFICATION

Replace stator coil.

BOTH RESISTANCES MEET SPECIFICATIONS

5. Wiring connection

Check the entire charging system for connections.
Refer to the "WIRING DIAGRAM" section.

POOR CONNECTION

Correct.

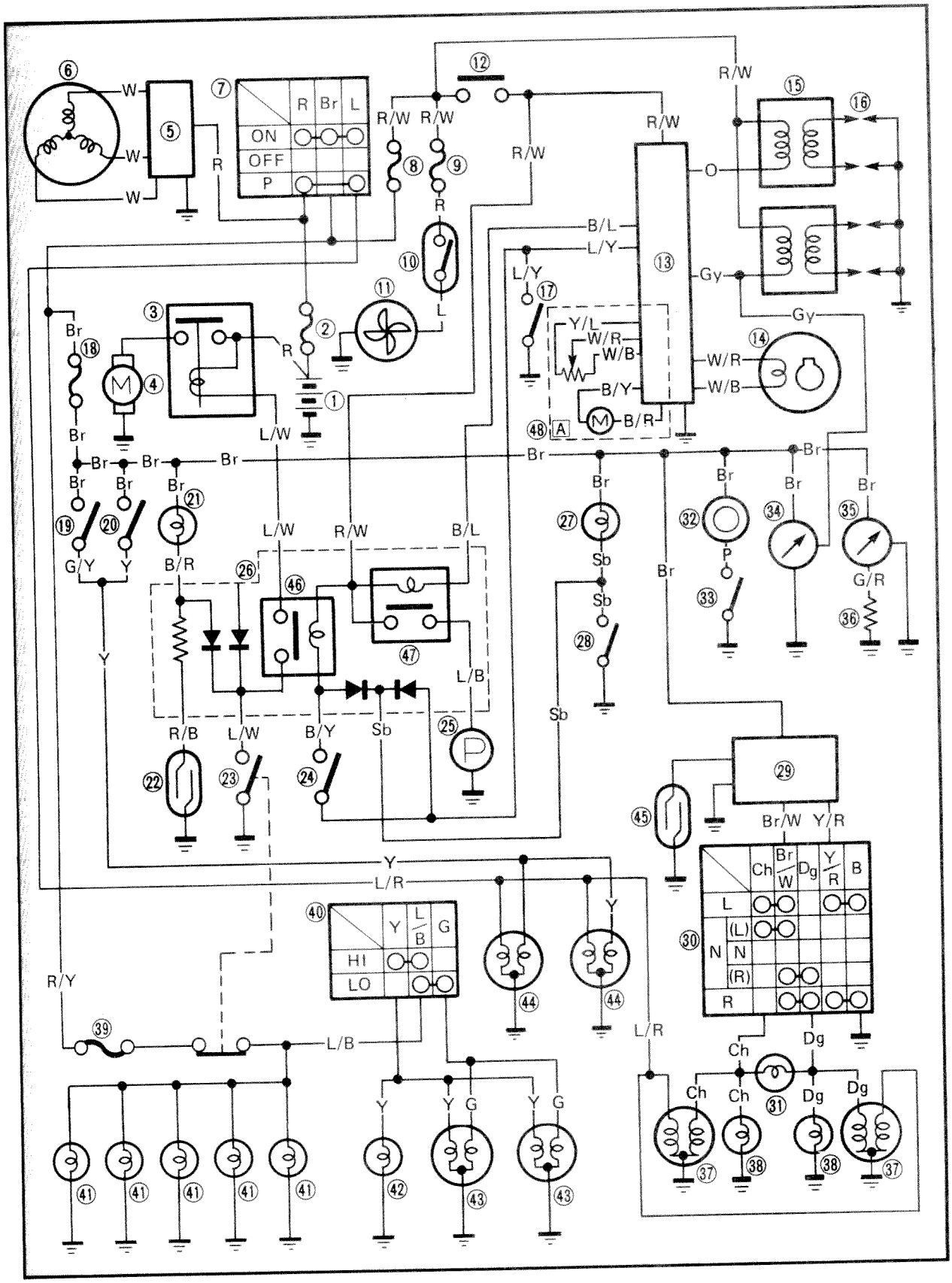
CORRECT

Replace rectifier/regulator.

— MEMO —

LIGHTING SYSTEM

CIRCUIT DIAGRAM

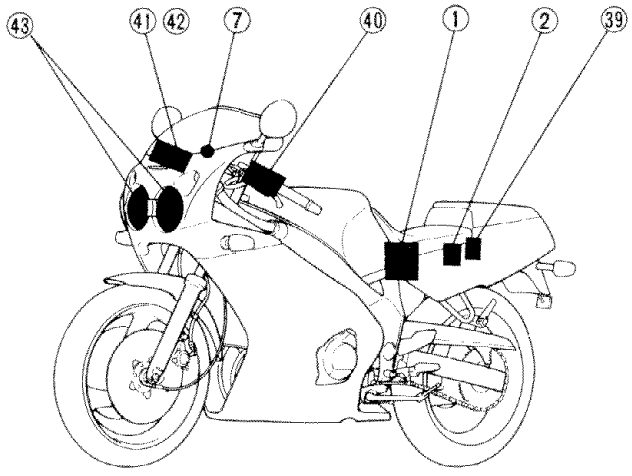


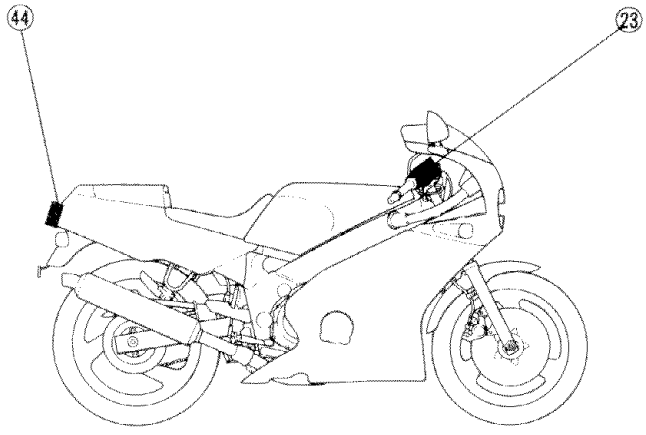
Aforementioned circuit is lighting circuit in circuit diagram.

NOTE:

For color codes, see page 8-2.

① Battery
② Fuse (main)
⑦ Main switch
㉓ "START" switch
㉟ Fuse (head)
㊵ "LIGHTS" (dimmer) switch
㊶ Meter light
㊷ "HIGH BEAM" indicator light
㊸ Headlight
㊹ Tail/brake light





TROUBLESHOOTING

HEADLIGHT "HIGH BEAM" INDICATOR LIGHT, TAILLIGHT, FRONT POSITION LIGHT AND/OR METER LIGHT DO NOT COME ON.

Procedure

Check;

1. Fuse (main and head)
2. Battery
3. Main switch
4. "LIGHTS" (Dimmer) switch
5. Wiring connection
   (Entire lighting system)

NOTE:

- Remove the following parts before troubleshooting.
  1) Seat
  2) Side cowling
  3) Top cover
  4) Air filter case
- Use the following special tool(s) in this troubleshooting.

Pocket tester:
YU-03112
90890-03112

1. Fuse (main and head)

- Remove the fuse (main and head)
- Connect the pocket tester (Ω x 1) to the fuse.
- Check the fuse for continuity.
  Refer to "FUSE INSPECTION" in the CHAPTER 3.

NO CONTINUITY → Fuse is faulty, replace it.

CONTINUITY ↓

2. Battery

Check the battery condition. Refer to the "BATTERY INSPECTION" section in the CHAPTER 3.

Specific gravity:
1.280 at 20°C (68°F)

INCORRECT →
- Refill battery fluid.
- Clean battery terminals.
- Recharge or replace battery.

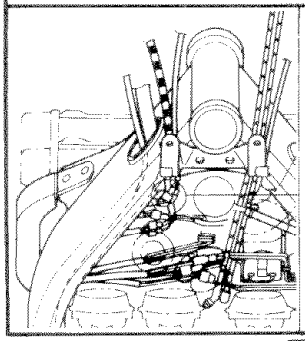
CORRECT ↓

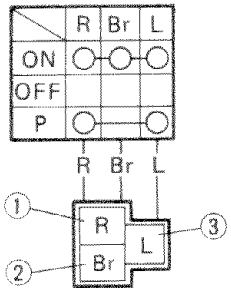
*

*

3. Main switch

- Disconnect the main switch coupler from the wireharness.
- Check the switch component for the continuity between "Red ① and Brown ②", "Red ① and Blue ③". Refer to the "CHECKING OF SWITCHES" section.





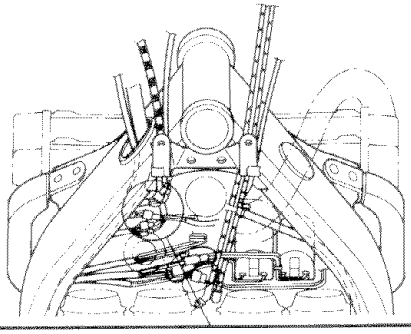
INCORRECT

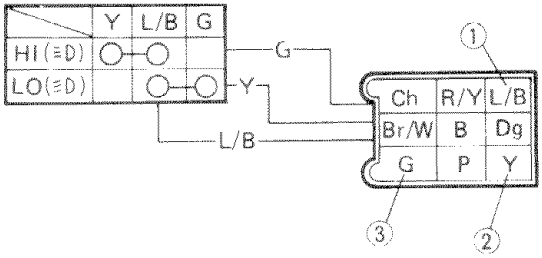
Main switch is faulty, replace it.

CORRECT

4. "LIGHTS" (dimmer) switch

- Turn the "LIGHTS" switch to "ON" position.
- Check the switch component for the continuity between "Blue/Black ① and Yellow ②" and "Blue/Black ① and Green ③". Refer to the "CHECKING OF SWITCHES" section.



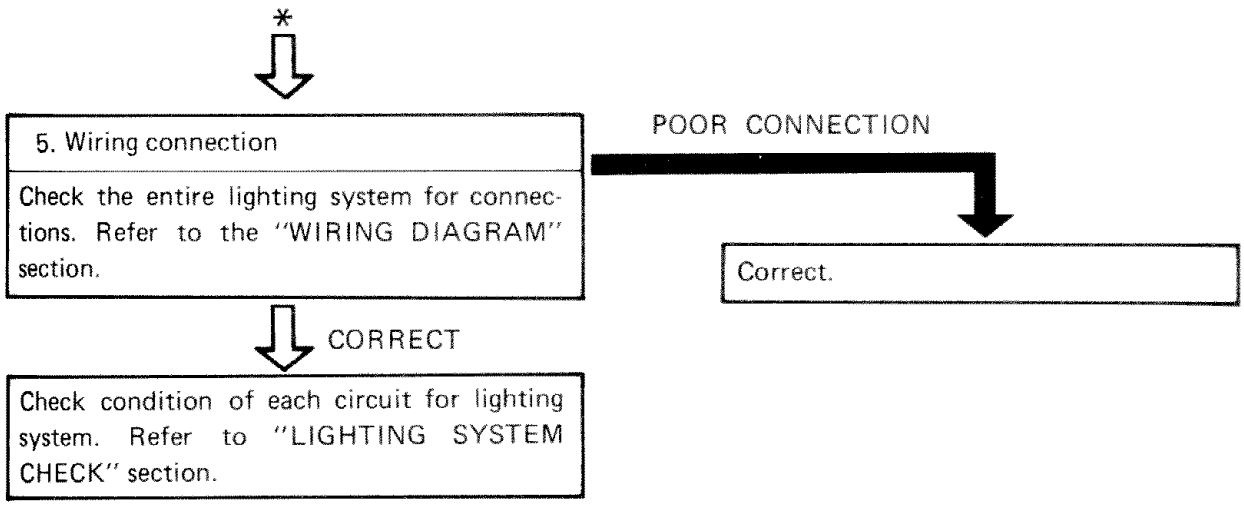


INCORRECT

"LIGHTS" (dimmer) switch is faulty, replace handlebar switch (left).

CORRECT

*


*
5. Wiring connection
Check the entire lighting system for connections. Refer to the "WIRING DIAGRAM" section.
POOR CONNECTION
Correct.
CORRECT
Check condition of each circuit for lighting system. Refer to "LIGHTING SYSTEM CHECK" section.

LIGHTING SYSTEM CHECK

1. Headlight and "HIGH BEAM" indicator light do not come on.

1. Bulb and bulb socket

Check the bulb and bulb socket for continuity. Refer to the "CHECKING OF BULBS" section.

NO CONTINUITY → Bulb and/or bulb socket are faulty, replace.

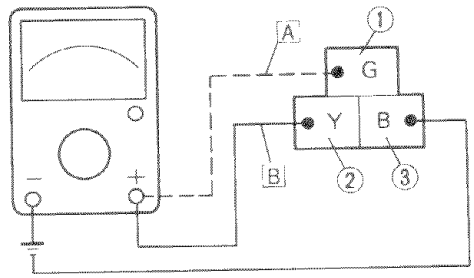
CONTINUITY ↓

2. Voltage

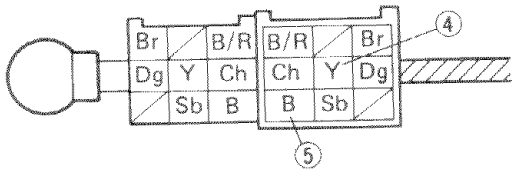
- Connect the pocket tester (DC 20V) to the headlight and "HIGH BEAM" indicator light leads.

Head light:
Tester (+) lead → Yellow ① or Green ② lead.
Tester (-) lead → Black ③ lead

"HIGH BEAM" indicator light:
Tester (+) lead → Yellow ④ lead
Tester (-) lead → Black ⑤ lead



OUT OF SPECIFICATION → Wiring circuit from main switch to bulb socket connector is faulty, repair.



[A] When "LIGHTS" (dimmer) switch is "LO" position.
[B] When "LIGHTS" (dimmer) switch is "HI" position.

- Turn the main switch to "ON".
- Turn the "LIGHTS" switch to "ON".
- Turn the "LIGHTS" (dimmer) switch to "LO" or "HI" position.
- Check for voltage (12V) on the "Green" and "Yellow" lead at bulb socket connector.

⇩ MEETS SPECIFICATION (12V)

This circuit is good.

2. Meter light does not come on.

1. Bulb and bulb socket

Check the bulb and bulb socket for continuity. Refer to the "CHECKING OF BULBS" section.

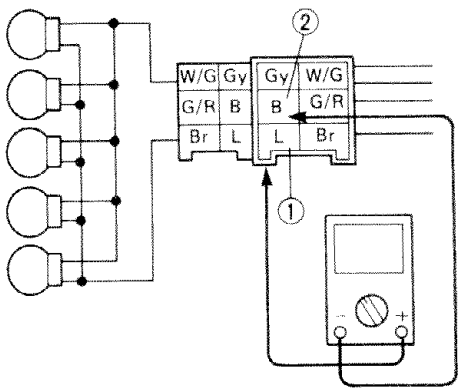
NO CONTINUITY → Bulb and/or bulb socket are faulty, replace.

⇩ CONTINUITY

2. Voltage

- Connect the pocket tester (DC20V) to the bulb socket leads.

Tester (+) lead → Blue ① lead
Tester (-) lead → Black ② lead



- Turn the main switch to "ON".
- Turn the "LIGHTS" switch to "PO" or "ON".
- Check for voltage (12V) on the "Blue" lead at the bulb socket connector.

OUT OF SPECIFICATION → Wiring circuit from main switch to bulb socket connector is faulty, repair.

⇩ MEETS SPECIFICATION (12V)

This circuit is good.

3. Front position light does not come on.

1. Bulb and bulb socket

Check the bulb and bulb socket for continuity. Refer to the "CHECKING OF BULBS" section.

NO CONTINUITY → Bulb and/or bulb socket are faulty, replace.

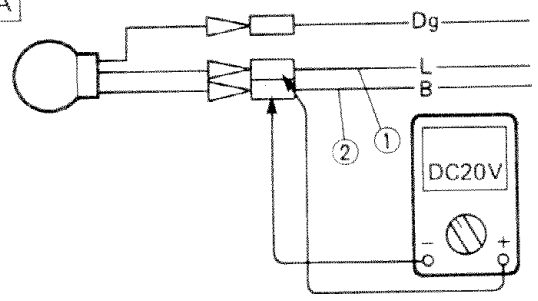
CONTINUITY ↓

2. Voltage

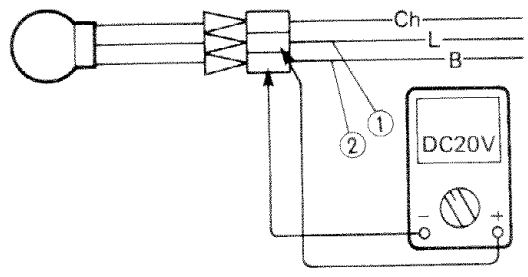
- Connect the pocket tester (DC20V) to the bulb socket connector.

Tester (+) lead → Blue ① lead
Tester (-) lead → Black ② lead

A



B



A Right side
B Left side

- Turn the main switch to "ON" or "PO" position.
- Check for voltage (12V) on the "Blue" lead at the bulb socket connector.

OUT OF SPECIFICATION → Wiring circuit from main switch to bulb socket connector is faulty, repair.

MEETS SPECIFICATION (12V) ↓

This circuit is good.

4. Taillight does not come on.

1. Bulb and bulb socket

Check the bulb and bulb socket for continuity. Refer to the "CHECKING OF BULBS" section.

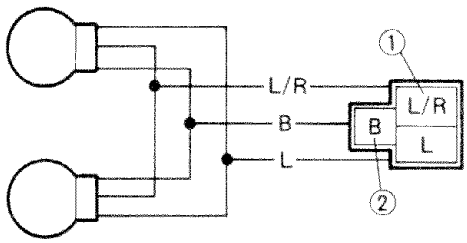
NO CONTINUITY → Bulb and/or bulb socket are faulty, replace.

CONTINUITY ↓

2. Voltage

- Connect the pocket tester (DC20V) to the bulb socket connector.

Tester (+) lead → Blue/Red ① lead
Tester (–) lead → Black ② lead



- Turn the main switch to "ON" or "PO" position
- Check for voltage (12V) on the "Blue" lead at the bulb socket connector.

OUT OF SPECIFICATION → Wiring circuit from main switch to bulb socket connector is faulty, repair.

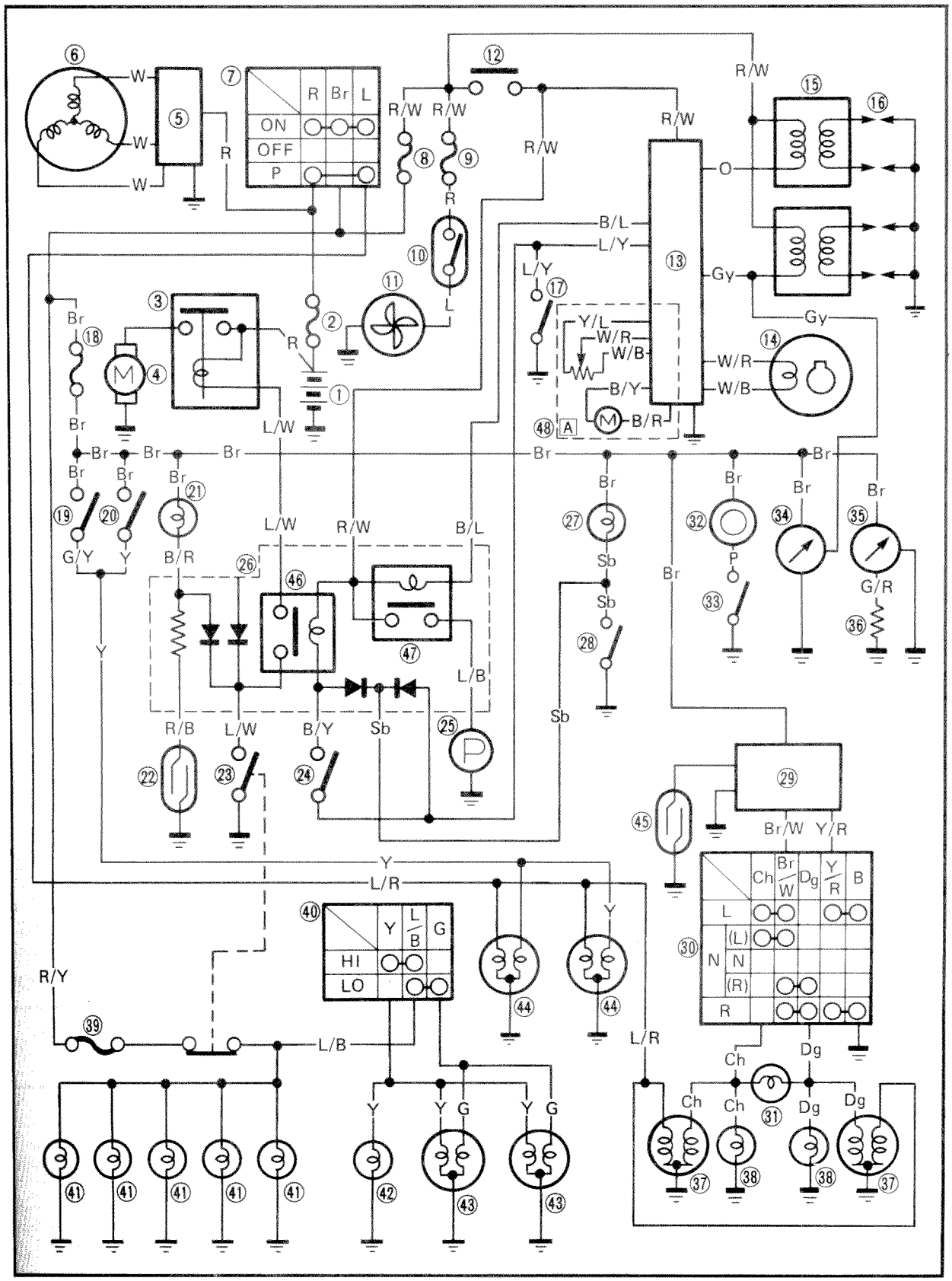
MEETS SPECIFICATION (12V) ↓

This circuit is good.

— MEMO —

SIGNAL SYSTEM

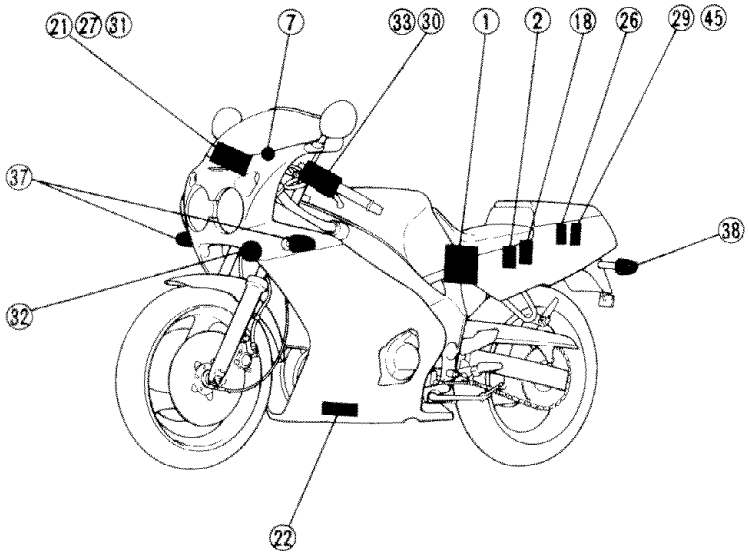
CIRCUIT DIAGRAM

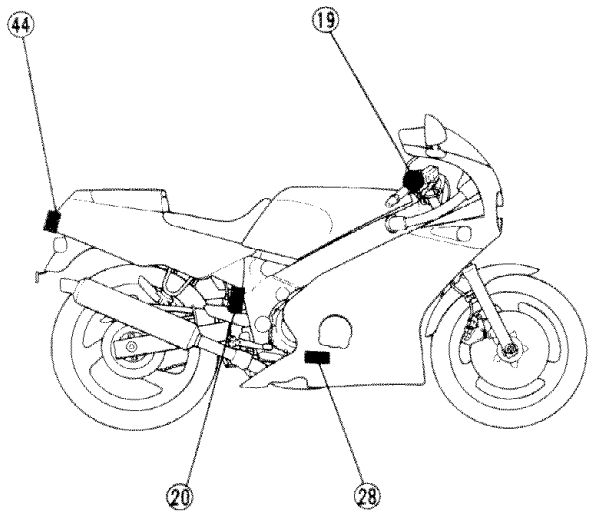


Aforementioned circuit diagram shows the signal circuit in the circuit diagram.

NOTE:
For the color codes, see page 8-2.

① Battery
② Fuse (main)
⑦ Main switch
⑱ Fuse (signal)
⑲ Front brake switch
⑳ Rear brake switch
㉑ "OIL LEVEL" indicator light
㉒ Oil level switch
㉖ Relay assembly
㉗ Neutral indicator light
㉘ Neutral switch
㉙ Flasher relay
㉚ "TURN" switch
㉛ "TURN" indicator light
㉜ Horn
㉝ Horn switch
㊲ Front position light/Front flasher light
㊳ Rear flasher light
㊹ Tail/brake light
㊺ Reed switch





TROUBLESHOOTING

- FLASHER LIGHT, BRAKE LIGHT AND/OR INDICATOR LIGHT DO NOT COME ON.
- HORN DOES NOT SOUND.
- TACHOMETER DOES NOT OPERATE.

Procedure

Check;

1. Fuse (main and signal)
2. Battery
3. Main switch
4. Wiring connection
   (entire signal system)

NOTE:

- Remove the following parts before troubleshooting.
  1) Seat (front and rear)
  2) Side cover (left)
  3) Side cowlings
  4) Top cover
  5) Air filter case
- Use the following special tool(s) in this troubleshooting.

Pocket tester:
YU-03112
90890-03112

1. Fuse (main and signal)

- Remove the fuse (main and signal).
- Connect the pocket tester (Ω x 1) to the fuse.
- Check the fuse for continuity.
  Refer to "FUSE INSPECTION" in the CHAPTER 3.

NO CONTINUITY → Fuse is faulty, replace it.

CONTINUITY ↓

2. Battery

Check the battery condition. Refer to the "BATTERY INSPECTION" section in the CHAPTER 3.

Specific gravity:
1.280 at 20°C (68°F)

INCORRECT →

- Refill battery fluid.
- Clean battery terminals.
- Recharge or replace battery.

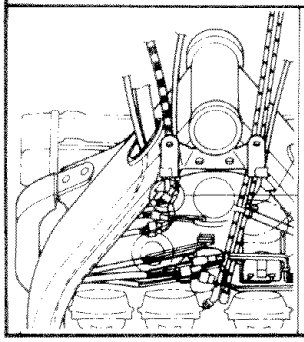
CORRECT ↓

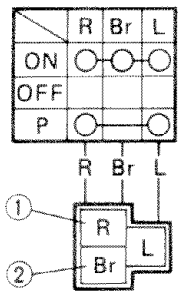
*

*

3. Main switch

- Disconnect the main switch coupler from the wireharness.
- Check the switch component for the continuity between "Red ① and Brown ②". Refer to the "CHECKING OF SWITCHES" section.





INCORRECT

Main switch is faulty, replace it.

CORRECT

4. Wiring connection

Check the entire signal system for connections. Refer to the "WIRING DIAGRAM" section.

POOR CONNECTION

Correct.

CORRECT

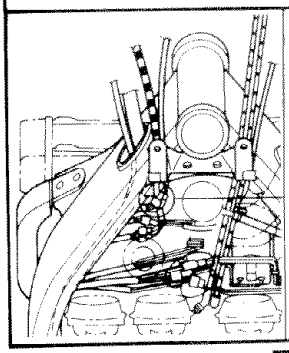
Check condition of each circuit for signal system. Refer to "SIGNAL SYSTEM CHECK" section.

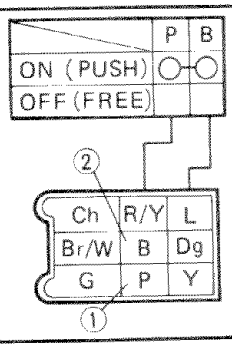
SIGNAL SYSTEM CHECK

1. Horn does not sound.

1. "HORN" switch.

- Disconnect the handlebar switch coupler from the wireharness.
- Check the switch component for the continuity between "Pink ① and Black ② ". Refer to the "CHECKING OF SWITCHES" section.





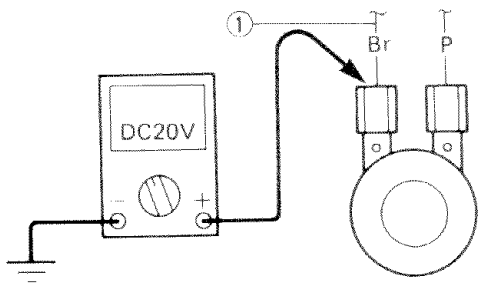
INCORRECT → "HORN" switch is faulty, replace handlebar switch (left).

CORRECT

2. Voltage

- Connect the pocket tester (DC20V) to the horn lead.

Tester (+) lead → Brown ① lead
Tester (-) lead → frame ground



OUT OF SPECIFICATION → Wiring circuit from main switch to horn terminal is faulty, repair.

- Turn the main switch to "ON".
- Check for voltage (12V) on the "Brown" lead at the horn terminal.

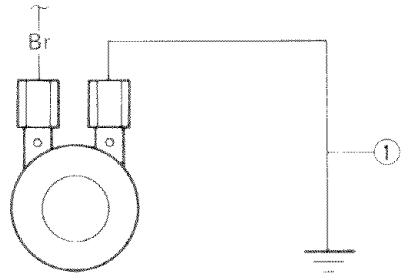
MEETS SPECIFICATION (12V)

*

*

3. Horn

- Disconnect the "Pink" lead at the horn terminal.
- Connect a jumper lead ① to the horn terminal and ground the jumper lead.
- Turn the main switch to "ON".



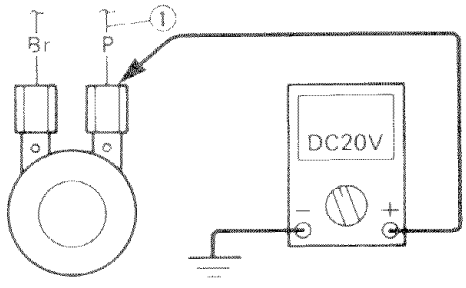
HORN IS SOUNDED → Horn is good.

HORN IS NOT SOUNDED

4. Voltage

- Connect the pocket tester (DC20V) to the horn at the Pink terminal.

Tester (+) lead → Pink ① lead
Tester (-) lead → frame ground



- Turn the main switch to "ON".
- Check for voltage (12V) on the "Pink" lead at the horn terminal.

OUT OF SPECIFICATION → Horn is faulty, replace it.

MEETS SPECIFICATION (12V) → Adjust or replace horn.

2. Brake light does not come on.

1. Bulb and bulb socket

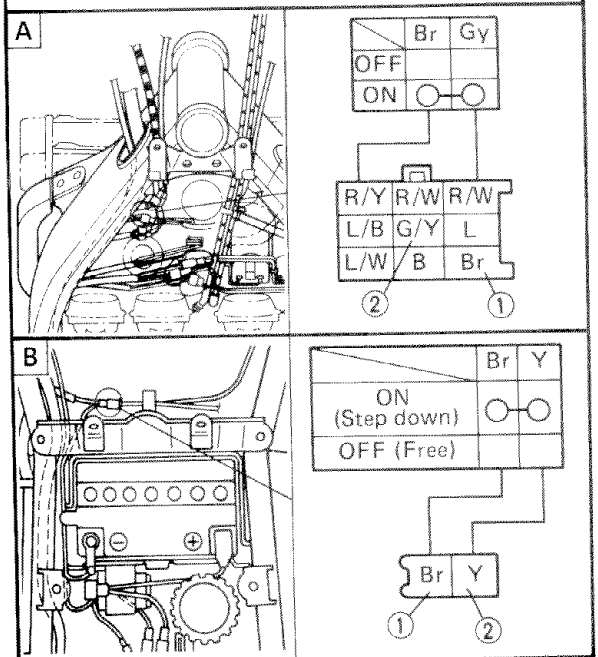
Check the bulb and bulb socket for continuity. Refer to the "CHECKING OF BULBS" section.

NO CONTINUITY → Bulb and/or bulb socket are faulty, replace.

CONTINUITY ↓

2. Brake switch

- Disconnect the brake switch coupler from the wireharness.
- Check the switch component for the continuity between "Brown ① and Green/Yellow ②", or "Brown ① and Yellow ③". Refer to the "CHECKING OF SWITCHES" section.



A Front brake switch
B Rear brake switch

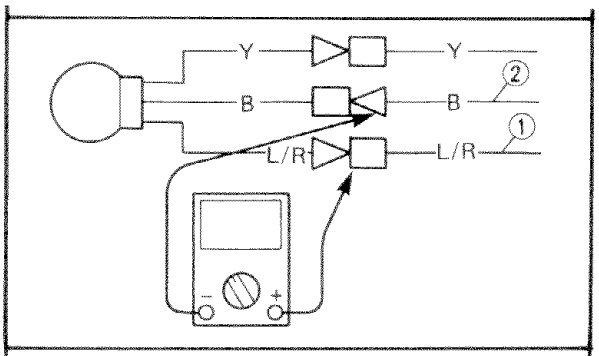
INCORRECT → Brake switch is faulty, replace it.

CORRECT ↓

3. Voltage

- Connect the Pocket Tester (DC20V) to the bulb socket connector.

Tester (+) lead → Yellow ① lead
Tester (–) lead → Black ② lead



- Turn the main switch to "ON".
- The brake level is pulled in or brake pedal is stepped down.
- Check for voltage (12V) on the "Yellow" lead at the bulb socket connector.

OUT OF SPECIFICATION

Wiring circuit from main switch to bulb socket connector is faulty, repair.

MEETS SPECIFICATION (12V)

This circuit is good.

3. Flasher light and/or "TURN" indicator light do not blink.

1. Bulb and bulb socket

Check the bulb and bulb socket for continuity. Refer to the "CHECKING OF BULBS" section.

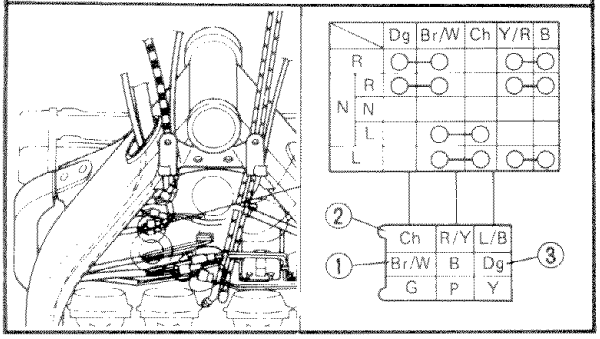
NO CONTINUITY

Bulb and/or bulb socket are faulty, replace.

CONTINUITY

2. "TURN" switch

- Disconnect the handlebar switch coupler from the wireharness.
- Check the switch component for the continuity between "Brown/White ① and Chocolate ② " and "Brown/White ① and Dark green ③ ". Refer to the "CHECKING OF SWITCHES" section.



INCORRECT

"TURN" switch is faulty, replace handlebar switch (left).

CORRECT

*

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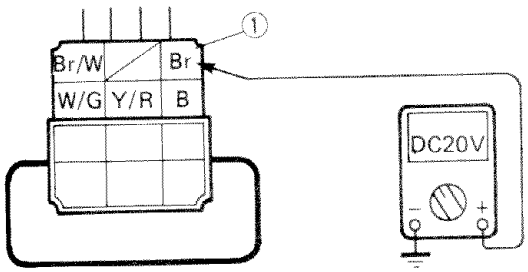
3. Voltage

- Connect the Pocket Tester (DC20V) to the flasher relay.

Tester (+) lead → Brown ① lead
Tester (-) lead → frame ground



- Turn the main switch to "ON".
- Check for voltage (12V) on the "Brown" lead at the flasher relay terminal.

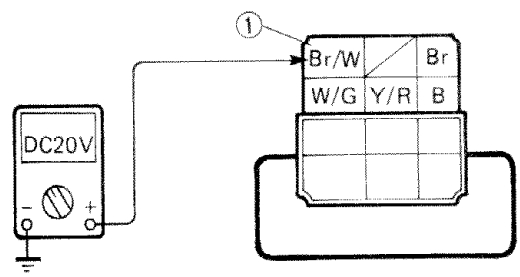
OUT OF SPECIFICATION → Wiring circuit from main switch to flasher relay connector is faulty, repair.

MEETS SPECIFICATION (12V)

4. Voltage

- Connect the pocket tester (DC20V) to the flasher relay.

Tester (+) lead → Brown/White ① lead
Tester (-) lead → frame ground



- Turn the main switch to "ON".
- Check for voltage (12V) on the "Brown/White" lead at the flasher relay terminal.

OUT OF SPECIFICATION → Flasher relay is faulty, replace it.

MEETS SPECIFICATION (12V)

*

*

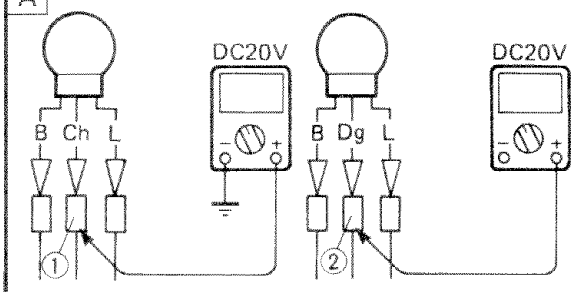
5. Voltage

- Connect the Pocket Tester (DC20V) to the Bulb socket connector.

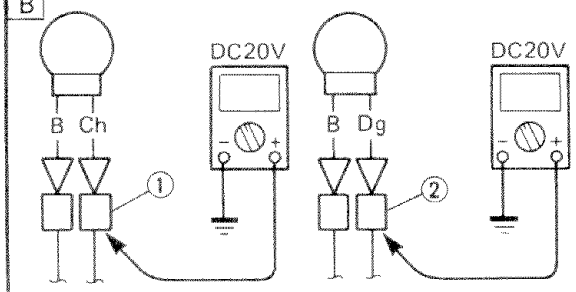
At flasher light (left):
Tester (+) lead → Chocolate ① lead
Tester (-) lead → frame ground

At flasher light (right):
Tester (+) lead → Dark green ② lead
Tester (-) lead → frame ground

A



B



A Front
B Rear

- Turn the main switch to "ON".
- Turn the "TURN" switch to "L" or "R".
- Check for voltage (12V) on the "Chocolate" lead or "Dark green" lead at the bulb socket connector.

OUT OF SPECIFICATION

Wiring circuit from "TURN" switch to bulb socket connector is faulty, repair.

MEETS SPECIFICATION (12V)

This circuit is good.

4. "NEUTRAL" indicator light does not come on.

1. Bulb and bulb socket

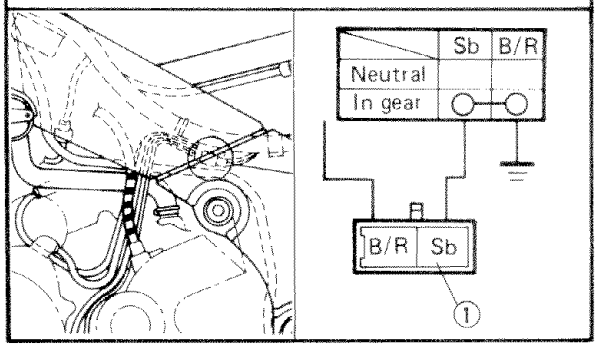
Check the bulb and bulb socket for continuity. Refer to the "CHECKING OF BULBS" section.

NO CONTINUITY → Bulb and/or bulb socket are faulty, replace.

CONTINUITY ↓

2. Neutral switch

- Disconnect the neutral switch lead from the wireharness.
- Check the switch component for the continuity between "Sky blue ① and ground". Refer to the "CHECKING OF SWITCHES" section.



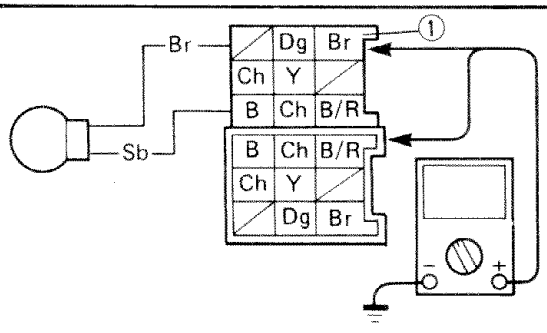
INCORRECT → Neutral switch is faulty, replace it.

CORRECT ↓

3. Voltage

- Connect the pocket tester (DC20V) to the bulb.socket connector.

Tester (+) lead → Brown ① lead
Tester (–) lead → frame ground



- Turn the main switch to "ON".
- Check for voltage (12V) on the "Brown" lead at bulb socket connector.

OUT OF SPECIFICATION → Wiring circuit from main switch to bulb socket connector is faulty, repair.

MEETS SPECIFICATION (12V) → This circuit is good.

5. "OIL LEVEL" indicator light does not come on when engine oil level is low.

1. Bulb and bulb socket

Check the bulb and bulb socket for continuity. Refer to the "CHECKING OF BULBS" section.

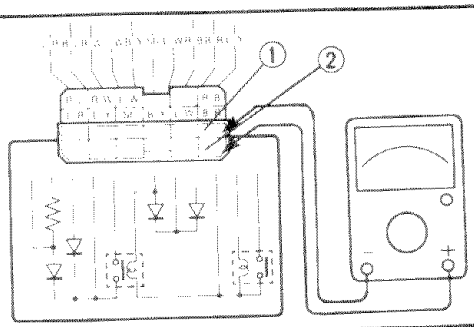
NO CONTINUITY → Bulb and/or bulb socket are faulty, replace.

CONTINUITY

2. Resistor

- Remove the relay assembly from the wire-harness.
- Connect the pocket tester (Ω x 1) to the relay assembly terminal.

Tester (+) lead → Black/Red terminal ①
Tester (-) lead → Red/Black terminal ②



- Check the resistor for continuity.

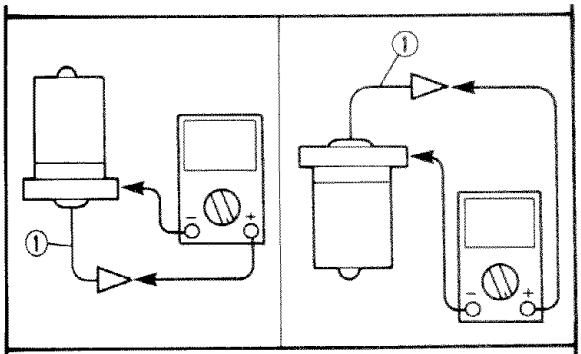
NO CONTINUITY → Resistor is faulty, replace relay assembly.

CONTINUITY

3. Oil level switch

- Drain the engine oil and remove the oil level switch from the oil pan.
- Connect the pocket tester (Ω x 1) to the oil level gauge.

Tester (+) lead → Red/Black ① lead
Tester (−) lead → Oil level switch body



• Check the oil level switch for continuity.

Switch position		Good condition	Bad condition		
A	Upright position	X	O	X	O
B	Upside down position	O	X	X	O

O : Continuity X : Nocontinuity

BAD CONDITION

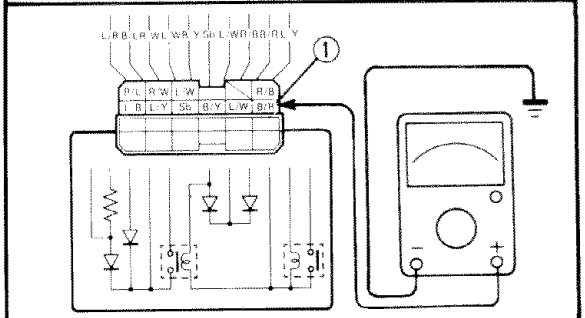
Oil level switch is faulty, replace it.

GOOD CONDITION

4. Voltage

• Connect the pocket tester (DC20V) to the bulb socket connector.

Tester (+) lead → Black/Red ① lead
Tester (-) lead → frame ground



• Turn the main switch to "ON".
• Check for voltage (12V) on the "Brown" lead at bulb socket connector.

OUT OF SPECIFICATION

Wiring circuit from main switch to bulb socketed connector is faulty, repair.

MEETS SPECIFICATION (12V)

This circuit is good.

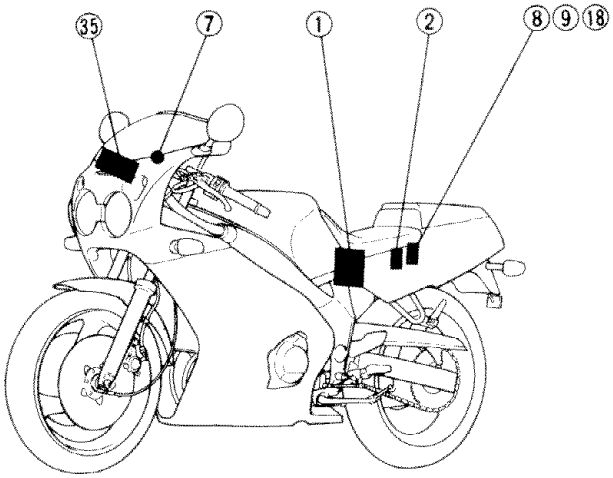
— MEMO —

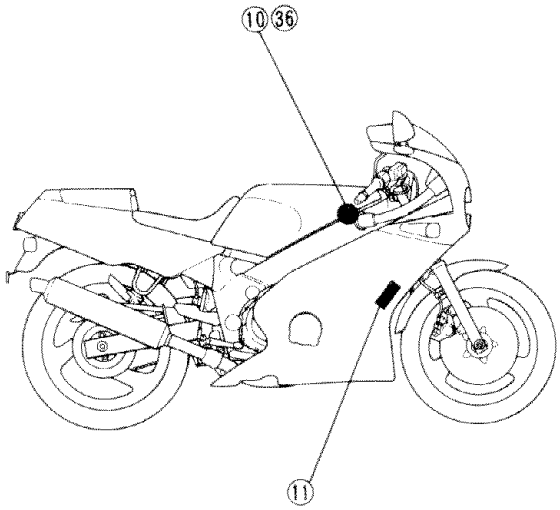
Aforementioned circuit diagram shows the cooling circuit in the circuit diagram.

NOTE:

For the color codes see page 8-2.

① Battery
② Fuse (main)
⑦ Main switch
⑧ Fuse (ignition)
⑨ Fuse (fan)
⑩ Thermo switch
⑪ Fan motor
⑱ Fuse (signal)
㉟ Engine temperature gauge
㊱ Thermo unit





TROUBLESHOOTING

FAN MOTOR DOES NOT TURN.

Procedure

Check;

1. Fuse (main and fan)
2. Battery
3. Fan motor (Test 1)
4. Fan motor (Test 2)
5. Thermo switch
6. Wiring connection
   (Entire cooling system)

NOTE:

- Remove the following before troubleshooting.
  1) Seat (front and rear)
  2) Top cover
  3) Fuel tank
  4) Air filter case
- Use the following special tool in this troubleshooting.

Pocket tester:
YU-03112
90890-03112

1. Fuse (main and fan)

- Remove the fuse (main and fan).
- Connect the pocket tester (Ω x 1) to the fuse (main and fan).
- Check the fuse for continuity.

NO CONTINUITY → Fuse is faulty, replace it.

CONTINUITY ↓

2. Battery

Check the battery condition.
Refer to the "BATTERY INSPECTION" section in the CHAPTER 3.

Specific gravity:
1.280 at 20°C (68°F)

INCORRECT → • Refill battery fluid.
• Clean battery terminals.
• Recharge or replace battery.

CORRECT ↓

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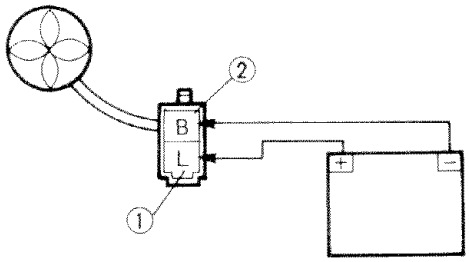
*

3. Fan motor (test 1)

- Disconnect the fan motor coupler.
- Connect the battery voltage as shown.

Battery (+) lead → Blue ① terminal
Battery (-) lead → Black ② terminal



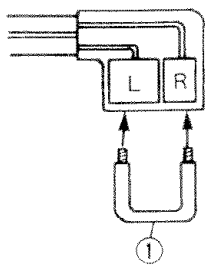
- Check the fan motor for operation.

NO OPERATIVE → Replace fan motor.

OPERATIVE

4. Fan motor (test 2)

- Turn the main switch to "ON"
- Disconnect the thermo switch coupler.
- Connect the terminal with the jumper ① lead as shown.



NO OPERATIVE → Wiring circuit from battery to fan motor connector is faulty, repair.

OPERATIVE

*

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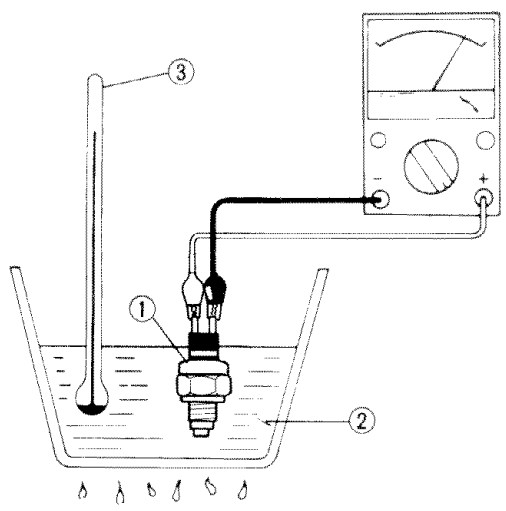
5. Thermo switch

- Remove the thermo switch from the thermostat housing.
- Connect the pocket tester (Ω x 1) to the thermo switch ① .
- Immerse the thermo switch in the water ② .
- Check the thermo switch for continuity. Note temperatures while heating the water with the temperature gauge ③ .

Test step	Water temperature	Good condition
1	0 ~ 98°C (32 ~ 208.4°F)	X
2	More than 105 ± 3°C (221.0 ± 5.4°F)	○
3*	105 to 98°C (221.0 to 208.4°F)	○
4*	Less than 98°C (208.4°F)	X

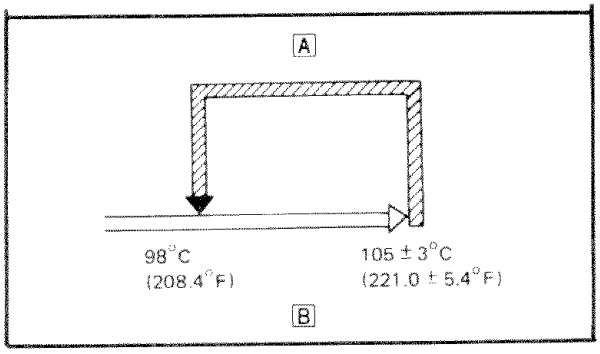
Test 1 & 2; Heat-up tests
Test 3* & 4*; Cool-down tests
○ : Continuity X : No continuity



⚠ WARNING:

Handle the thermo switch with special care. Never subject it to strong shock or allow it to be dropped. Should it be dropped, it must be replaced.

Thermo switch:
8 Nm (0.8 m · kg, 5.8 ft · lb)
Three bond sealock® #10



A THERMO SWITCH "ON", FAN "ON"
B COOLANT TEMPERATURE

BAD CONDITION

Replace thermo switch.

WHEN ENGINE IS HOT, TEMPERATURE GAUGE DOES NOT MOVE.

Procedure

Check;

1. Fuse (main and signal)
2. Battery
3. Main switch
4. Thermo unit
5. Voltage
6. Wiring connection
   (Entire cooling system)

NOTE:

- Remove the following parts before troubleshooting.
  1) Seat (front and rear)
  2) Side cowlings
  3) Top cover
  4) Fuel tank
  5) Air filter case
  6) Upper cowling
- Use the following special tool(s) in this troubleshooting.

Pocket tester:
YU-03112
90890-03112

1. Fuse (main and signal)

- Remove the fuse (main and signal).
- Connect the pocket tester (Ω x 1) to the fuse.
- Check the fuse for continuity. Refer to "FUSE INSPECTION" in the CHAPTER 3.

NO CONTINUITY → Fuse is faulty, replace it.

CONTINUITY ↓

2. Battery

Check the battery condition. Refer to the "BATTERY INSPECTION" section in the CHAPTER 3.

Specific gravity:
1.280 at 20°C (68°F)

INCORRECT →
- Refill battery fluid.
- Clean battery terminals.
- Recharge or replace battery.

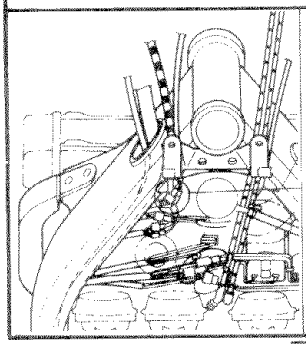
CORRECT ↓

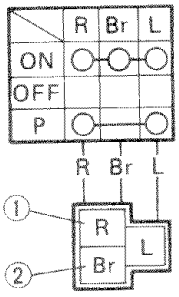
*

*

3. Main switch

- Disconnect the main switch coupler from the wireharness.
- Check the switch component for the continuity between "Red ① and Brown ② ". Refer to the "CHECKING OF SWITCHES" section.





INCORRECT

Main switch is faulty, replace it.

CORRECT

4. Thermo unit

- Drain the coolant and remove the thermo unit.

⚠ WARNING:

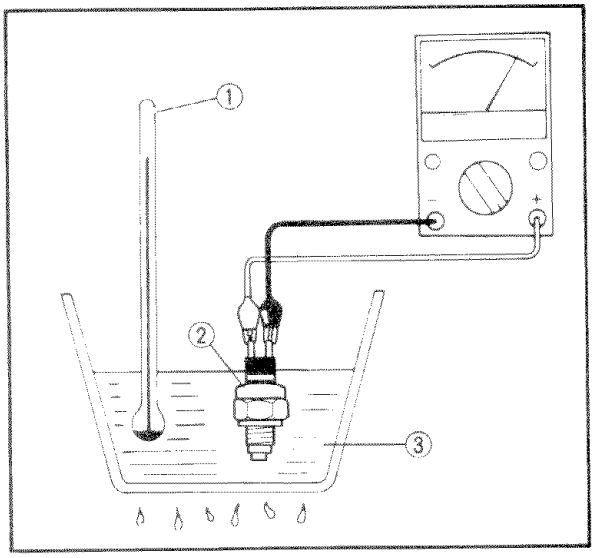
Handle the thermo unit with special care. Never subject it to strong or allow it to be dropped. Should it be dropped, it must be replaced.

- Immerse the thermo unit ② in coolant ③ .
- Measure the resistance at each temperature as tabulated.

① Thermometer

Coolant temperature	Resistance
50°C (122°F)	154Ω
80°C (176°F)	47 ~ 57Ω
100°C (212°F)	26 ~ 29Ω
120°C (248°F)	16Ω

- After measuring the thermo unit, install the unit.



Thermo unit:
15 Nm (1.5 m · kg, 11 ft · lb)
Use water resistant sealant.

⚠ CAUTION:
Avoid overtightening.

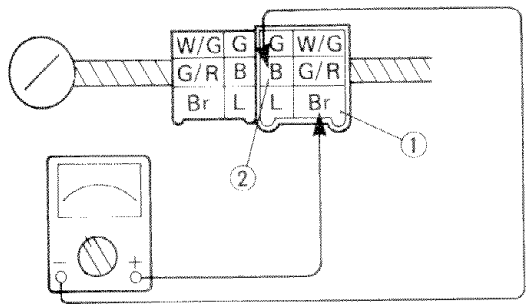
OUT OF SPECIFICATION

Thermo unit is faulty, replace it.

MEET SPECIFICATIONS

5. Voltage

- Connect the pocket tester (DC20V) to the temperature gauge leads.



Tester (+) lead → Brown ① lead
Tester (–) lead → Black ② lead

- Turn the main switch to "ON".
- Check for voltage (12V) on the "Brown" lead at the temperature gauge connector.

OUT OF SPECIFICATION

Wiring circuit from main switch to temperature gauge connector, repair.

MEETS SPECIFICATION (12V)

6. Wiring connection

Check the entire cooling system for connections. Refer to the "WIRING DIAGRAM" section.

POUR CONNECTION

Correct.

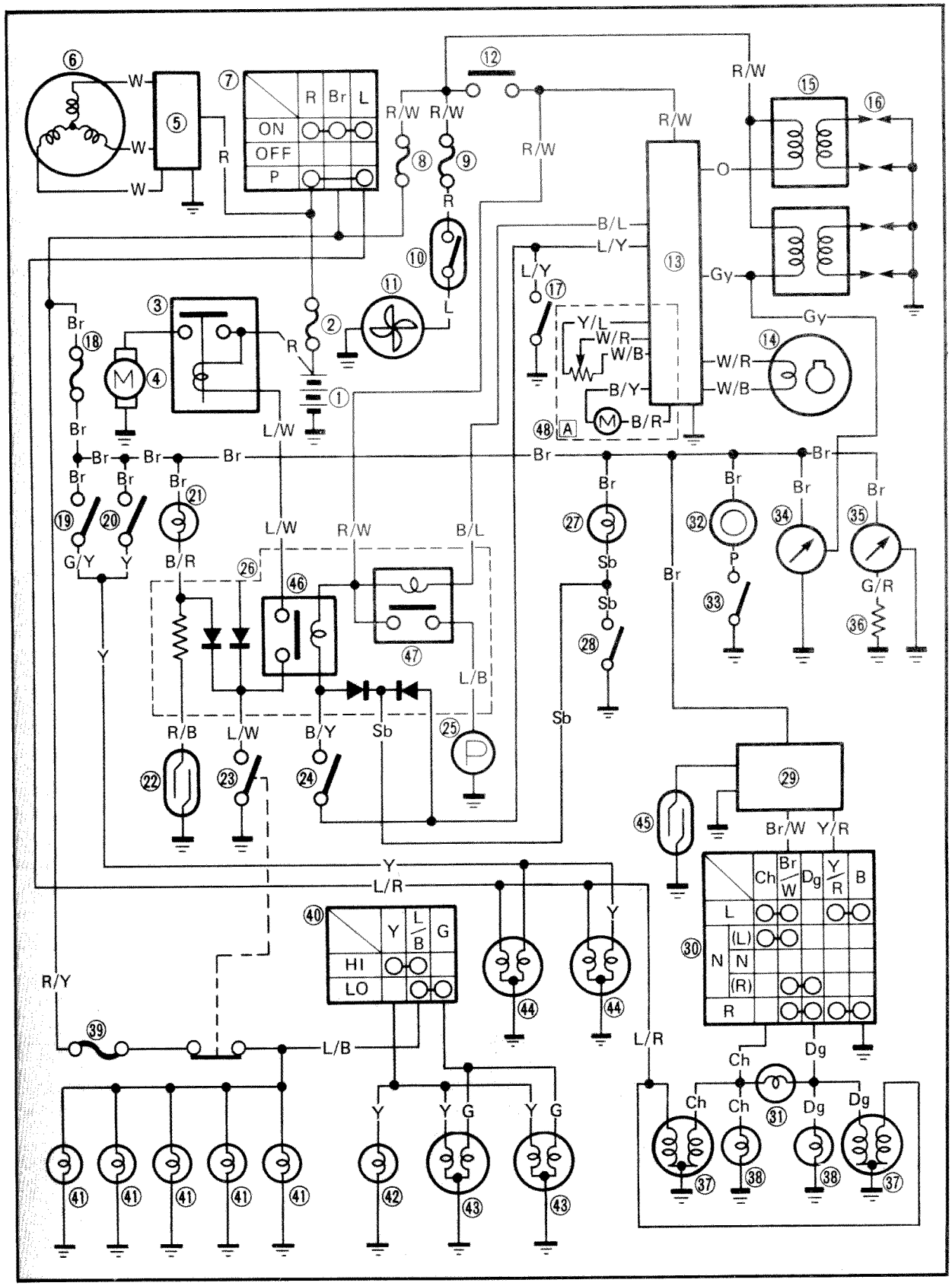
CORRECT

Temperature gauge is faulty, replace it.

— MEMO —

FUEL PUMP SYSTEM

CIRCUIT DIAGRAM

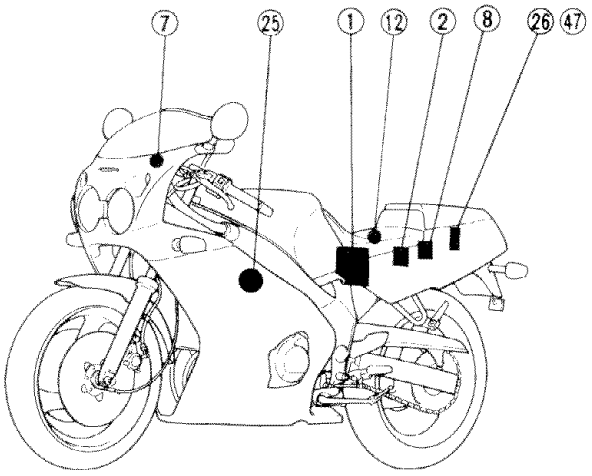


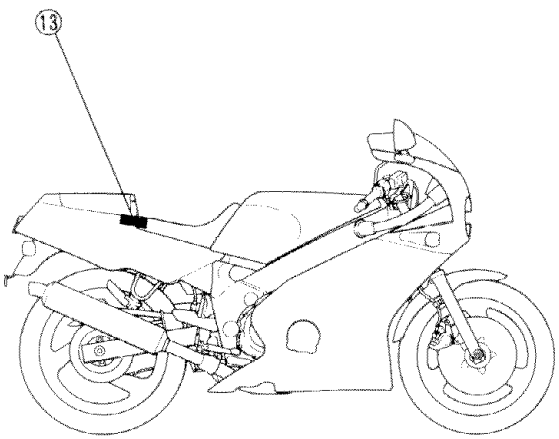
Aforementioned circuit shows fuel pump system circuit in circuit diagram.

NOTE:

For the color codes, see page 8-2.

① Battery
② Fuse (main)
⑦ Main switch
⑧ Fuse (ignition)
⑫ "ENGINE STOP" switch
⑬ Ignitor unit
㉕ Fuel pump
㉖ Relay assembly
㊼ Fuel pump relay





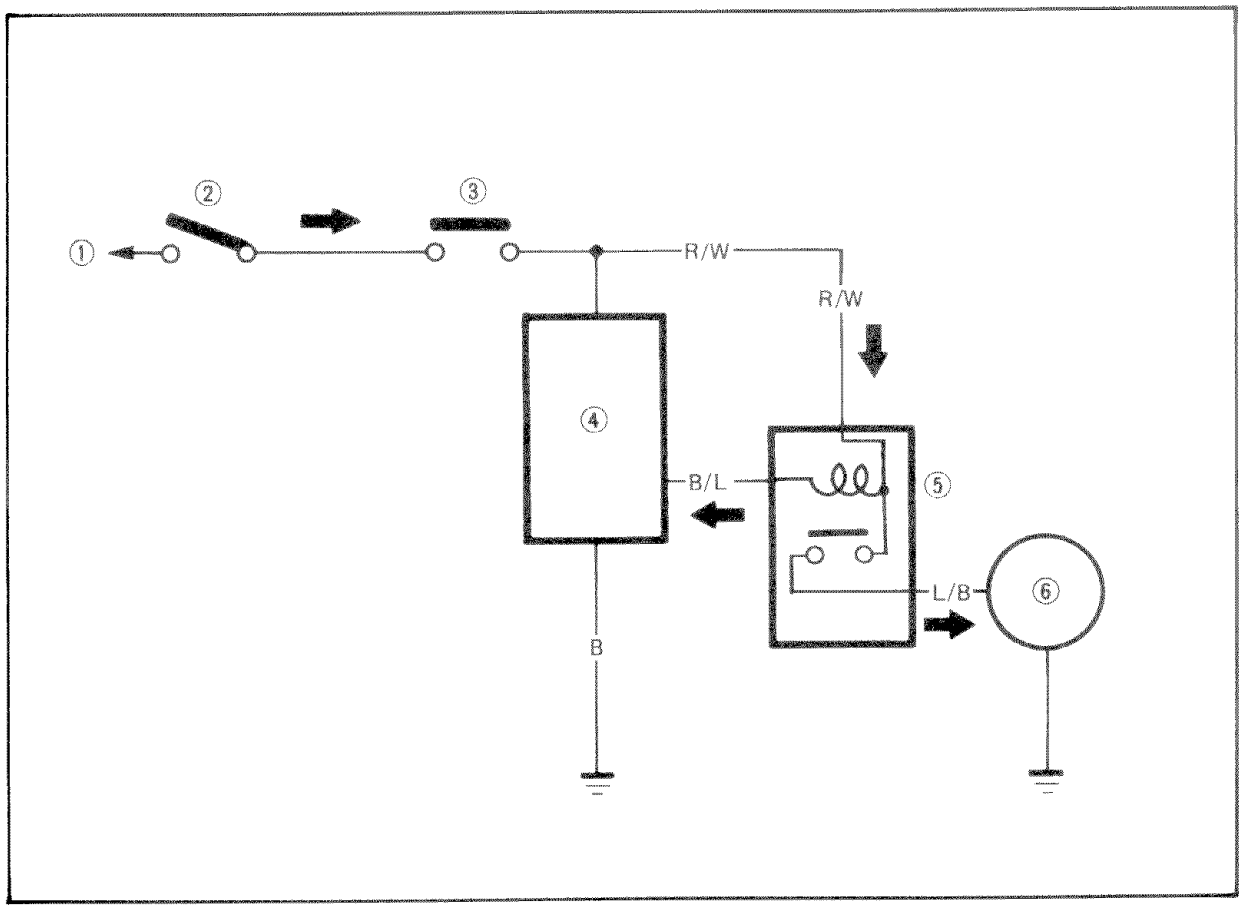
FUEL PUMP CIRCUIT OPERATION

The fuel pump circuit consists of the fuel pump relay, fuel pump, "ENGINE STOP" switch and digital ignition unit.

The digital ignition unit includes the control unit for the fuel pump.

The fuel pump starts and stops as indicated in the chart below.

① To main fuse and battery
② Main switch
③ "ENGINE STOP" switch
④ Digital ignitor unit
⑤ Fuel pump relay
⑥ Fuel pump



FUEL PUMP		
START		STOP
• Main/Engine stop switch turned to "ON"	• Engine turned on	• Engine turned off
For about 5 seconds when carburetor fuel level is low	After about 0.1 second	After about 5 seconds

TROUBLESHOOTING

FUEL PUMP FAILS TO OPERATE.

Procedure

1. Fuse (main)
2. Battery
3. Main switch
4. "ENGINE STOP" switch
5. Fuel pump relay (relay assembly)
6. Fuel pump
7. Wiring connection (Entire fuel system)

NOTE:

- Remove the following before troubleshooting.
  1) Seat (front and rear)
  2) Top cover
  3) Fuel tank
- Use the following special tool in this troubleshooting.

Pocket tester:
YU-03112
90890-03112

1. Fuse (main)

- Remove the fuse (main) and (ignition).
- Connect the pocket tester (Ω x 1) to the fuse (main).
- Check the fuse for continuity.

NO CONTINUITY → Fuse is faulty, replace it.

CONTINUITY ↓

2. Battery

- Check the battery condition. Refer to the "BATTERY INSPECTION" section in the CHAPTER 3.

Specific gravity:
1.280 at 20°C (68°F)

INCORRECT →
- Refill battery fluid.
- Clean battery terminals.
- Recharge or replace battery.

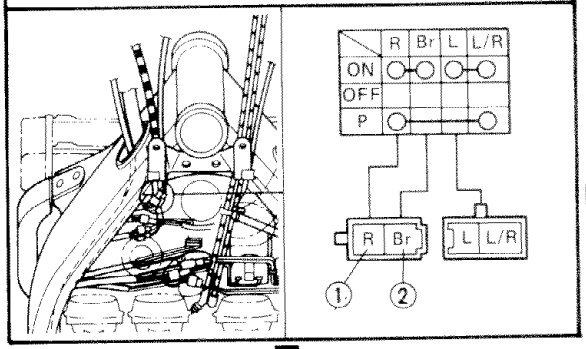
CORRECT ↓

*

*

3. Main switch

- Disconnect the main switch coupler and lead from the wire harness.
- Check the switch component for the continuity between "Red ① and Brown ②". Refer to the "CHECKING OF SWITCHES" section.



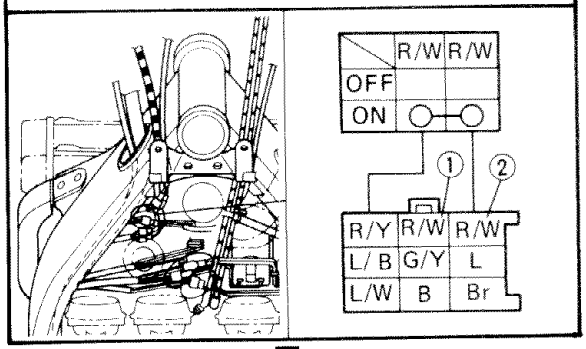
INCORRECT

Replace main switch.

CORRECT

4. "ENGINE STOP" switch

- Disconnect the "ENGINE STOP" switch coupler from the wire harness.
- Check the switch component for the continuity between "Red/White ① and Red/White ②". Refer to the "CHECKING OF SWITCHES" section.



INCORRECT

Replace handlebar switch (right).

CORRECT

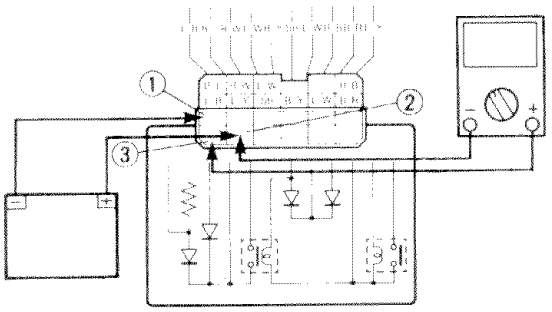
*

*

5. Fuel pump relay (relay assembly)

- Disconnect the fuel pump relay coupler from the wire harness.
- Connect the pocket tester (Ω x 1) and battery (12V) voltage to the fuel pump relay coupler terminals.

Tester (+) lead → Blue/Black ① terminal
Tester (-) lead → Red/White ② terminal
Battery (+) lead → Red/White ② terminal
Battery (-) lead → Black/Blue ③ terminal



- Check the relay for continuity.

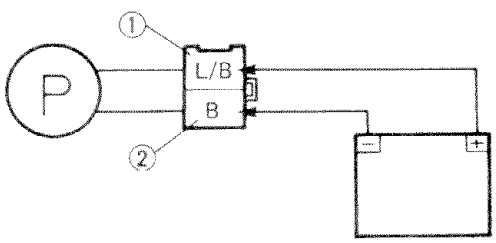
NO CONTINUITY → Replace relay assembly.

CONTINUITY ↓

6. Fuel pump

- Disconnect the fuel pump coupler from the wire harness.
- Connect the battery voltage as shown.

Battery (+) lead → Blue/Black ① terminal
Battery (-) lead → Black ② terminal

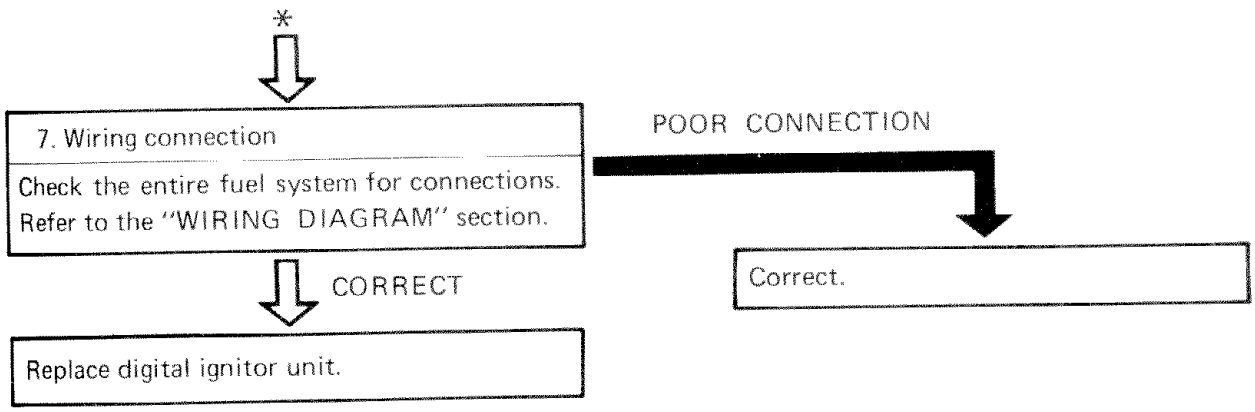


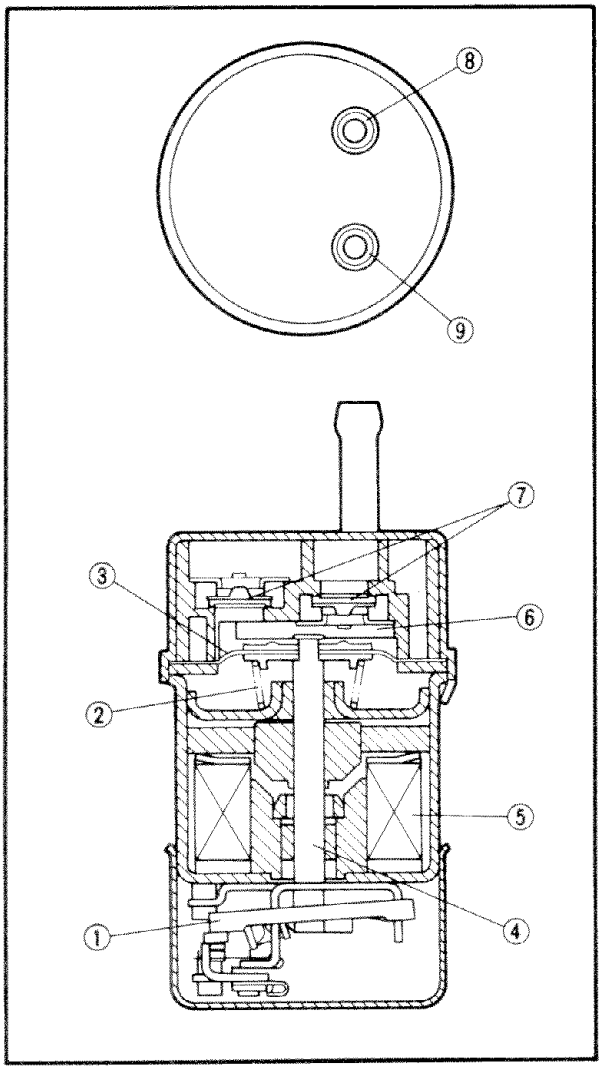
- Check the fuel pump operation.

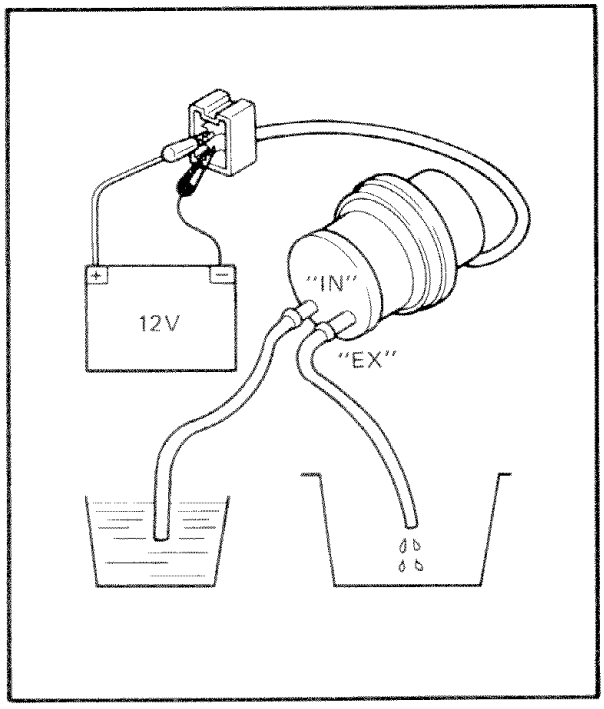
NO OPERATIVE → Replace fuel pump.

OPERATIVE ↓

*


*
7. Wiring connection
Check the entire fuel system for connections.
Refer to the "WIRING DIAGRAM" section.
POOR CONNECTION
Correct.
CORRECT
Replace digital ignitor unit.





FUEL PUMP TEST

Operation

The diaphragm is pulled in by the plunger allowing fuel to be sucked into the fuel chamber. Fuel is pushed out from the pump until carb float chamber is filled with fuel, and then the cut-off switch cuts off the circuit.
When the spring pushes the diaphragm further to the end, the cut-off switch turns on and the solenoid coil pulls the plunger with the diaphragm forcing fuel into the fuel chamber.

NOTE:
When the main and "ENGINE STOP" switches are ON, the fuel pump relay is activated for five (5) seconds at which time the fuel pump operates.

① Cut-off switch
② Spring
③ Diaphragm
④ Plunger
⑤ Solenoid coil
⑥ Fuel chamber
⑦ Valve
⑧ Outlet
⑨ Inlet

Inspection

1. Inspect:
   - Fuel pump
     Cracks/Damage → Replace.
2. Check:
   - Fuel pump operation

Checking steps:
- Connect the suitable hose to fuel pump.
- Put the "IN" side hose into the clean solvent.
- Place the suitable container under the "EX" side hose end.
- Connect the battery to fuel pump terminal.

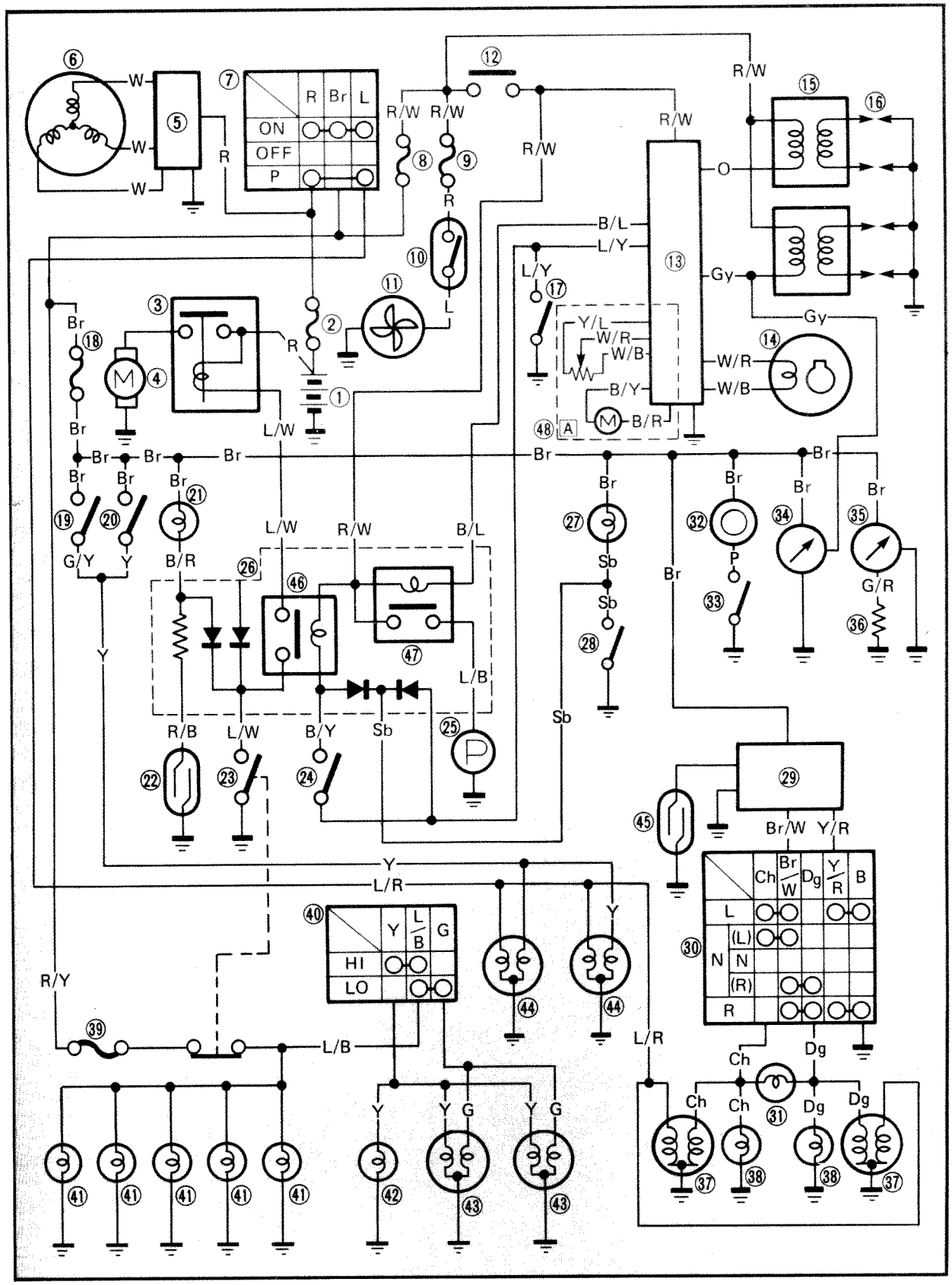
Battery (+) terminal → "Blue/Black" terminal
Battery (-) terminal → "Black" terminal

- If solvent flow out from "EX" side hose, puel pump is good. If not replace the fuel hose.

NOTE:
After checking, pump out the solvent from inside of fuel pump.

EXUP SYSTEM (FOR CALIFORNIA ONLY)

CIRCUIT DIAGRAM



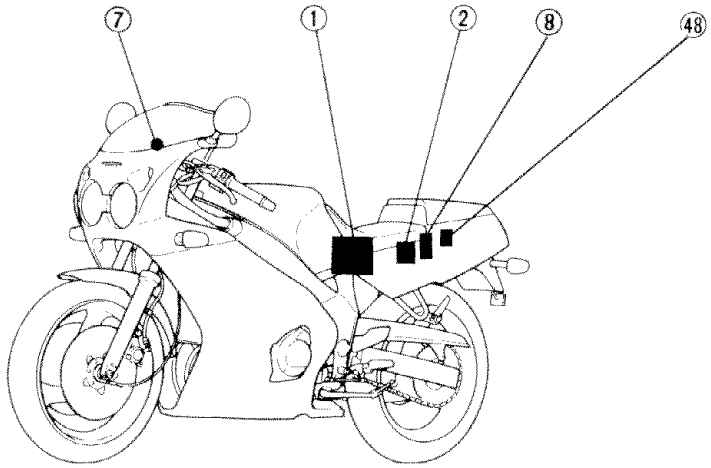
Aformentioned circuit diagram shows EXUP circuit in circuit diagram.

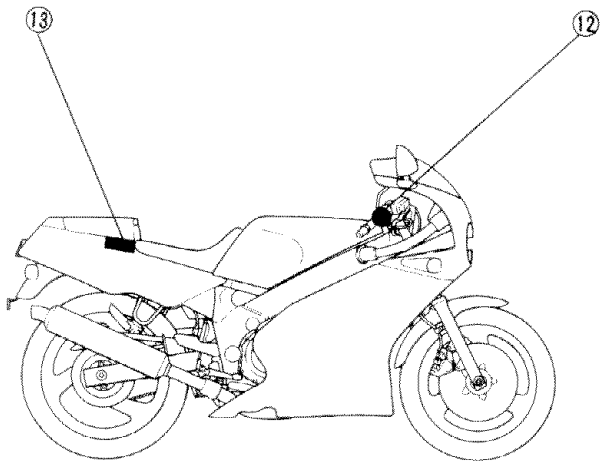
NOTE:

For the color codes, see page 8-2.

① Battery
② Fuse (main)
⑦ Main switch
⑧ Fuse (ignition)
⑫ "ENGINE STOP" switch
⑬ Ignitor unit
㊽ "EXUP" servo motor

[A] For California only





TROUBLESHOOTING

EXUP SERVOMOTOR DOES NOT OPERATE.

Procedure (1)
Check;
1. EXUP servo motor operation (with EXUP servo motor coupler connected)
2. Voltage
3. EXUP servo motor operation (with EXUP servo motor coupler disconnected)
4. EXUP servo motor resistance (potentiometment resistance)
5. Wiring connection (entire EXUP system)

Procedure (2)
Check;
1. Fuse "MAIN/IGNITION"
2. Battery
3. Main switch
4. "ENGINE STOP" switch
5. Wiring connection (entire EXUP system)

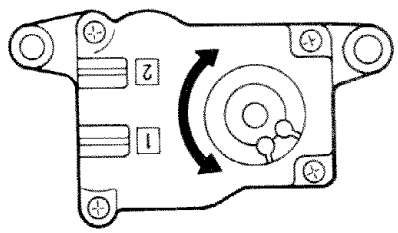
NOTE:
- Remove the following parts before troubleshooting.
  1) Seat (front and rear)
  2) Side cover (left)
  3) Side cowling (left)
- Use the following special tool in this troubleshooting.

Pocket tester:
YU-03112
90890-03112

Procedure (1)

1. EXUP servo motor operation (with EXUP servo motor coupler connected)

- Disconnect the EXUP cables at EXUP servo motor pully side.
- Start the engine and rev it up to 2,000 r/min.



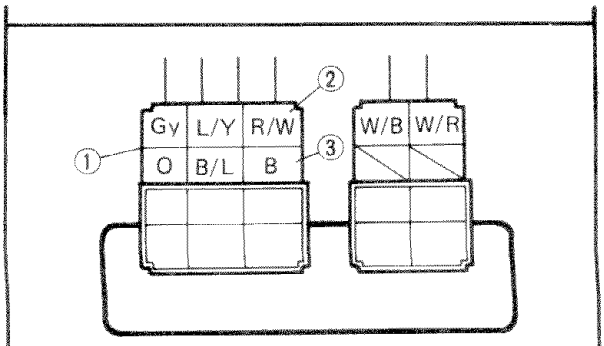
PULLY TURNS → Check the EXUP cables connection. If connection is correct. Inspect the EXUP valve and cables. Refer to "ENGINE OVERHAUL" section in the CHAPTER 4.

PULLY DOES NOT TURN ↓

2. Voltage

- Connect the pocket tester (DC20V) to the ignitor unit ① connector.

Tester (+) lead → Red/White ② terminal
Tester (–) lead → Black ③ terminal



• Turn the main switch to "ON" and check for the voltage between "Red/White and Black".

Voltage (Red/White – Black):
10 ~ 14V

OUT OF SPECIFICATION

Go to the "Procedure (2)".

MEETS SPECIFICATION

3. EXUP servo motor operation (with EXUP servo motor coupler disconnected)

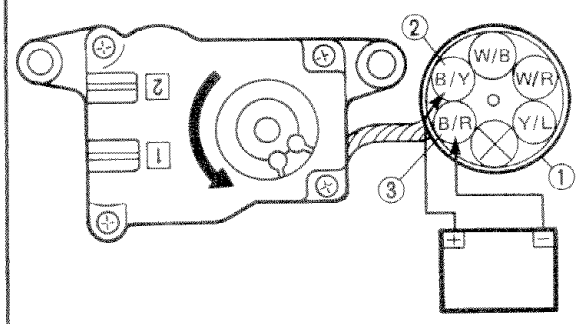
• Disconnect the EXUP cables at EXUP servo motor pulley side.
• Disconnect the EXUP servo motor coupler ① from the wireharness.
• Connect the battery leads to the EXUP servo motor coupler.

Battery positive lead → Black/Yellow ② lead
Battery negative lead → Black/Red ③ lead

• Check for pully operation by allowing it to rotate serveral times.

⚠ CAUTION:

This test should be performed within a few seconds to prevent further damage.



PULLY DOES NOT TURN

Replace EXUP servo motor.

PULLY TURNS

*

*

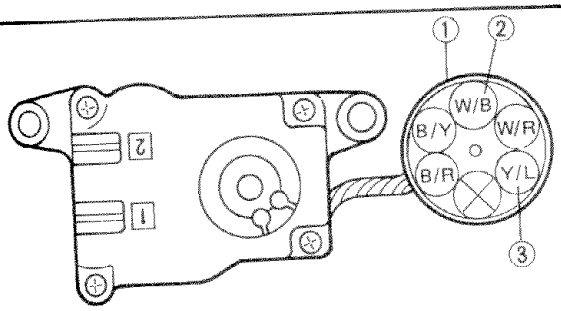
4. EXUP servo motor resistance (potentiometer resistance)

- Disconnect the EXUP servo motor coupler ① from the wireharness.

Steps 1:

- Connect the pocket tester (Ω x 1K) to the EXUP servo motor couplers.

Tester (+) lead → White/Black ② lead
Tester (–) lead → Yellow/Blue ③ lead



- Measure the EXUP servo motor resistance.

EXUP servo motor resistance:
6.7 ~ 10 kΩ
(White/Black – Yellow/Blue)

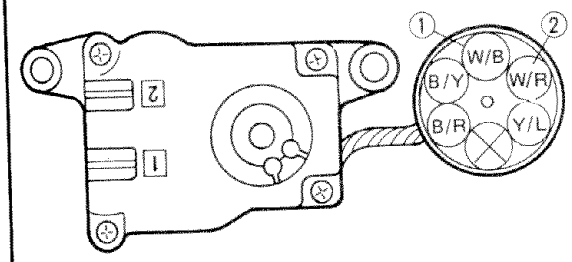
OUT OF SPECIFICATION

EXUP servo motor is faulty, replace it.

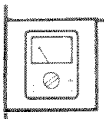
Steps 2:

- Connect the pocket tester (Ω x 1K) to the EXUP servo motor coupler.

Tester (+) lead → White/Black ① lead
Tester (–) lead → White/Red ② lead



- Measure the EXUP servo motor resistance while turning the pully slowly.



EXUP servo motor resistance:
0 ~ about 10 kΩ
(White/Black — White/Red)
When pully is turned one turn.

BOTH MEET SPECIFICATIONS

5. Wiring connection

Check the entire EXUP system for connections. Refer to the "WIRING DIAGRAM" section.

CORRECT

Ignitor unit is faulty, replace it.

POOR CONNECTION

Correct.

Procedure (2)

1. Fuse "MAIN/IGNITION"
- Remove the fuse "MAIN" and "IGNITION".
- Connect the pocket tester (Ω x 1) to the fuse "MAIN" and "IGNITION".
- Check the fuse for continuity.

NO CONTINUITY → Replace fuse "MAIN" and/or "IGNITION".

CONTINUITY ↓

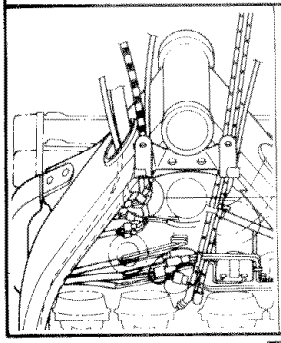
2. Battery
- Check the battery condition.
- Refer to the "BATTERY INSPECTION" section in the CHAPTER 3.

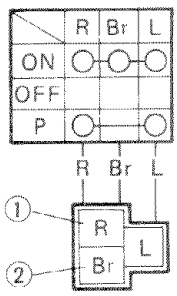
Specific gravity:
1.280 at 20° C (68° F)

INCORRECT → • Refill battery fluid. • Clean battery terminals. • Recharge or replace battery.

CORRECT ↓

3. Main switch
- Disconnect the main switch coupler from the wireharness.
- Check the switch component for the continuity between "Red ① and Brown ②". Refer to the "CHECKING OF SWITCHES" section.

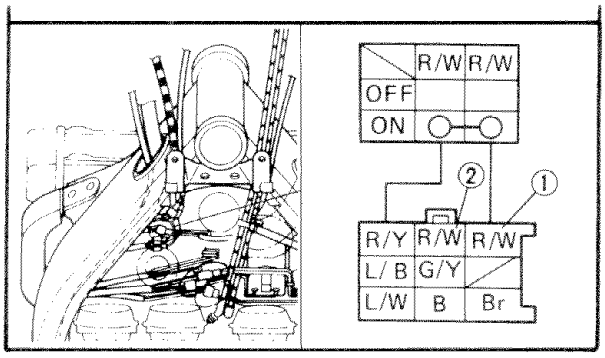




INCORRECT → Replace main switch.

CORRECT ↓

4. "ENGINE STOP" switch
- Disconnect the "ENGINE STOP" switch coupler from the wireharness.
- Check the switch component for the continuity between "Red/White ① and Red/White ②". Refer to the "CHECKING OF SWITCHES" section.



INCORRECT

Replace handlebar switch (right).

CORRECT

5. Wiring connection

Check the entire EXUP system for connections. Refer to the "WIRING DIAGRAM" section.

POOR CONNECTION

Correct.

CORRECT

Go to "Procedure (1)".

TROUBLESHOOTING

NOTE:
The following troubleshooting does not cover all the possible causes of trouble. It should be helpful, however, as a guide to troubleshooting. Refer to the relative procedure in this manual for inspection, adjustment and replacement of parts.

STARTING FAILURE/HARD STARTING

FUEL SYSTEM	PROBABLE CAUSE
Fuel tank	• Empty
	• Clogged fuel filter
	• Clogged fuel breather hose
	• Deteriorated fuel or fuel containing water or foreign material
Fuel cock	• Clogged fuel hose
Carburetor	• Deteriorated fuel, fuel containing water or foreign material
	• Clogged pilot jet
	• Clogged pilot air passage
	• Sucked-in air
	• Deformed float
	• Groove-worn needle valve
	• Improperly sealed valve seat
	• Improperly adjusted fuel level
	• Improperly set pilot jet
	• Clogged starter jet
	• Starter plunger malfunction
	• Improperly adjusted starter cable
Air filter element	• Clogged
Fuel pump	• Faulty fuel pump
	• Faulty fuel pump relay

ELECTRICAL SYSTEM

- Spark plug
  - Improper plug cap
  - Worn electrodes
  - Wire between terminals broken
  - Improper heat range
  - Faulty spark plug cap
- Ignition coil
  - Broken or shorted primary/secondary
  - Faulty spark plug lead
  - Broken body
- Full-transistor system
  - Faulty ignitor unit
  - Faulty pickup coil
- Switches and wiring
  - Faulty main switch
  - Faulty engine stop switch
  - Broken or shorted wiring
  - Faulty neutral switch
  - Faulty starter motor switch
  - Faulty clutch switch
- Starter motor
  - Faulty starter motor
  - Faulty starter relay
  - Faulty circuit cut-off relay
  - Faulty starter clutch

COMPRESSION SYSTEM

- Cylinder and cylinder head
  - Loose spark plug
  - Loose cylinder head or cylinder
  - Broken cylinder head gasket
  - Worn, damaged or seized cylinder

POOR MEDIUM AND HIGH SPEED PERFORMANCE

POOR MEDIUM AND HIGH SPEED PERFORMANCE

Refer to "Starting failure/Hard starting." (Fuel system, electrical system, compression system and valve train)

	PROBABLE CAUSE
Carburetor	• Improper jet needle clip position
	• Diaphragm malfunction
	• Improperly adjusted fuel level
	• Clogged or loose main jet
Air cleaner	• Clogged air filter
Fuel pump	• Faulty fuel pump

FAULTY GEAR SHIFTING

HARD SHIFTING

Refer to "Clutch dragging."

SHIFT PEDAL DOES NOT MOVE

	PROBABLE CAUSE
Shift shaft	• Improperly adjusted shift rod
	• Bent shift shaft
Shift cam, shift fork	• Groove jammed with impurities
	• Seized shift fork
	• Bent shift fork guide bar
Transmission	• Seized transmission gear
	• Jammed impurities
	• Incorrectly assembled transmission

JUMP-OUT GEAR

Shift shaft	• Improperly adjusted
	• Improperly returned stopper lever
Shift fork	• Worn shift fork
Shift cam	• Improper thrust play
	• Worn shift cam groove
Transmission	• Worn gear dog

CLUTCH SLIPPING/DRAGGING

CLUTCH SLIPPING

	PROBABLE CAUSE
Clutch	• Improperly adjusted clutch cable
	• Loose clutch spring
	• Fatigued clutch spring
	• Worn friction plate
	• Worn clutch plate
	• Improperly adjusted
	• Clutch ball housing
	• Worn clutch ball housing
Engine oil	• Low oil level
	• Improper quality (Low viscosity)
	• Deterioration

CLUTCH DRAGGING

	PROBABLE CAUSE
Clutch	• Improperly adjusted clutch cable
	• Improperly adjusted push lever position
	• Improper engagement of push lever and push rod
	• Warped clutch plate
	• Swollen friction plate
	• Broken clutch boss
	• Improperly adjusted clutch ball housing
	• Worn clutch ball housing
Engine oil	• High oil level
	• Improper quality (High viscosity)
	• Deterioration

OVERHEATING OR OVER-COOLING

OVERHEATING

- Ignition system
  - Improper spark plug gap
  - Improper spark plug heat range
  - Faulty ignitor unit
- Fuel system
  - Improper carburetor main jet (setting)
  - Improperly adjusted H dimension
  - Clogged air cleaner element
- Compression system
  - Heavy carbon build-up
- Engine oil
  - Incorrect oil level
  - Improper oil viscosity
  - Inferior oil quality
- Brake
  - Dragging brake
- Cooling system
  - Faulty water temperature meter
  - Faulty thermo-unit
  - Incorrect cooling water level
  - Faulty thermostat
  - Clogged or damaged radiator
  - Faulty radiator cap
  - Broken dowel pin/tipped gear
  - Faulty thermoswitch
  - Inoperative fan motor

OVER-COOLING

- Cooling system
  - Faulty water temperature meter
  - Faulty thermo-unit
  - Faulty thermostat
  - Faulty thermoswitch
  - Inoperative fan motor

FAULTY BRAKE

POOR BRAKING EFFECT

- Worn brake pads
- Worn disc
- Air in brake fluid
- Leaking brake fluid
- Faulty cylinder kit cup
- Faulty caliper kit seal
- Loose union bolt
- Broken brake hose
- Oily or greasy disc/brake pads
- Improper brake fluid level

FRONT FORK OIL LEAKAGE/MALFUNCTION

OIL LEAKAGE

- Bent, damaged or rusty inner tube
- Damaged or cracked outer tube
- Damaged oil seal lip
- Improperly installed oil seal
- Improper oil level (too much)
- Loose hexagon bolt (front fork bottom)
- Broken cap bolt O-ring
- Loose drain bolt
- Damaged drain bolt gasket

MALFUNCTION

- Bent, deformed or damaged inner tube
- Bent or deformed outer tube
- Damaged fork spring
- Worn or damaged slide metal
- Bent or damaged piston
- Improper oil viscosity or level

INSTABLE HANDLING

- **HANDLEBARS**
  - Improperly installed or bent
- **STEERING**
  - Improperly installed handle crown
  - Bent steering stem
  - Damaged bearing
- **FRONT FORKS**
  - Uneven oil levels on both sides
  - Uneven spring tension (Uneven damping adjuster position)
  - Broken spring
  - Twisted front forks
  - Uneven tire pressures on both sides
- **WHEELS**
  - Incorrect wheel balance
  - Deformed cast wheel
  - Unevenly worn tires
  - Incorrect tire pressure
  - Loose bearing
  - Bent or loose wheel axle
  - Excessive wheel run-out
- **FRAME**
  - Twisted
  - Damaged head pipe bearing race
  - Improperly installed bearing race
- **REAR ARM**
  - Worn bearing bushes
  - Damaged
- **REAR CUSHION**
  - Fatigued spring
  - Improper adjustment
  - Oil leakage
- **DRIVE CHAIN**
  - Improperly adjusted chain
- **FAIRING**
  - Damaged or broken
  - Incorrectly installed

FAULTY SIGNALS AND LIGHTS

HEADLIGHT DARK
- Improper bulb
- Too many electrical accessories
- Hard charging (broken stator coil wire, faulty rectifier with regulator)
- Incorrectly connected coupler/connector/ wire harness
- Improperly grounded
- Poor contacts (main or light switch)
- Bulb life expired

BULB BURNT OUT
- Improper bulb
- Faulty battery
- Faulty rectifier/regulator (AC generator)
- Improperly grounded
- Faulty switch (main and light switch)
- Bulb life expired

FLASHER DOES NOT LIGHT
- Improperly grounded
- Discharged battery
- Faulty flasher switch
- Faulty flasher relay
- Broken wire harness/loosely connected coupler
- Bulb burnt out

FLASHER KEEPS ON
- Faulty flasher relay
- Insufficient battery capacity (nearly discharged)
- Bulb burnt out (front or rear)

FLASHER WINKS SLOWER

- Faulty flasher relay
- Insufficient battery capacity (nearly discharged)
- Improper bulb
- Faulty switch (main or flasher switch)

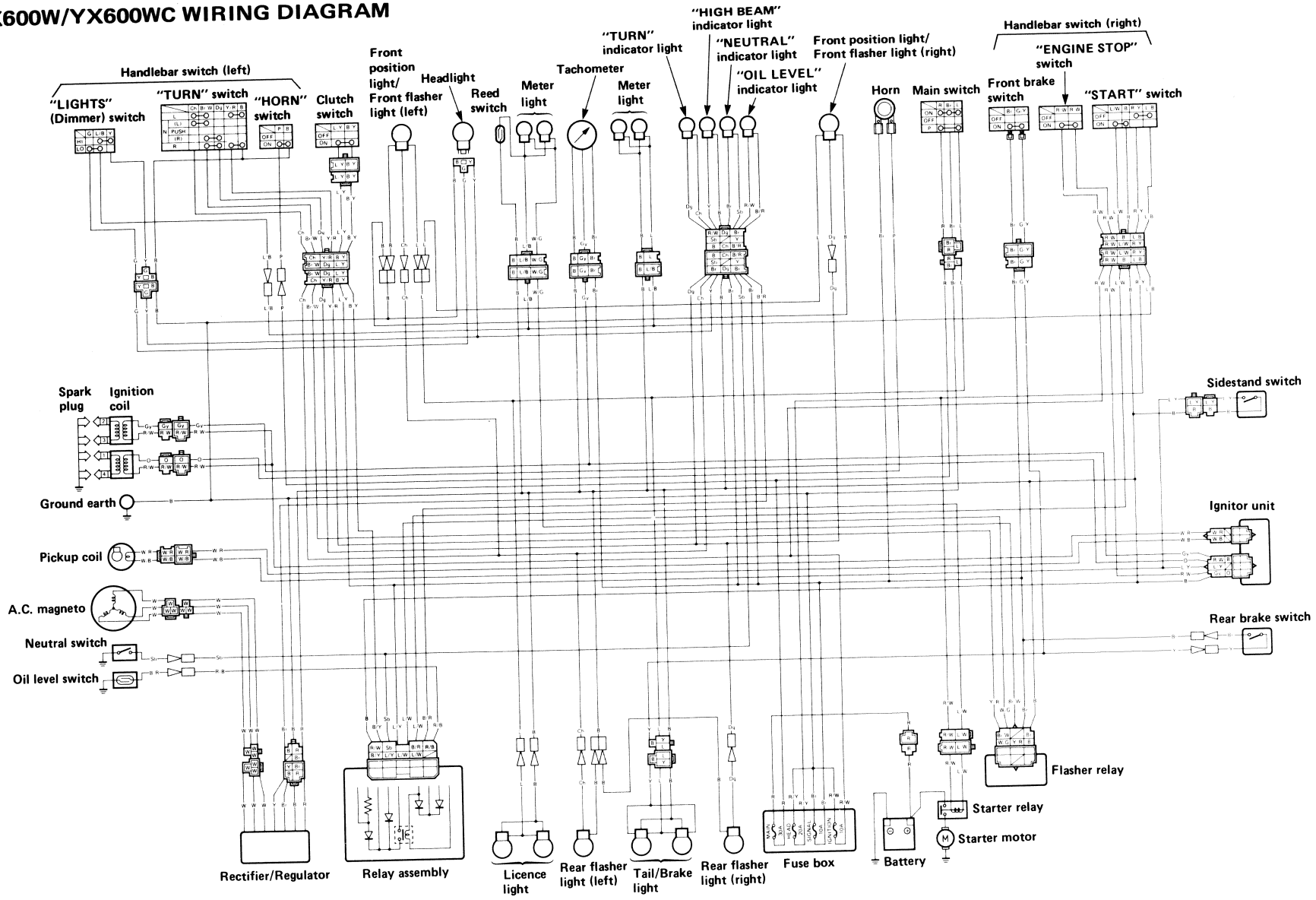
FLASHER WINKS QUICKER

- Improper bulb
- Faulty flasher relay

HORN IS INOPERATIVE

- Faulty battery
- Faulty switch (main or horn switch)
- Improperly adjusted horn
- Faulty horn (coil wire broken or having poor contacts)
- Broken wire harness

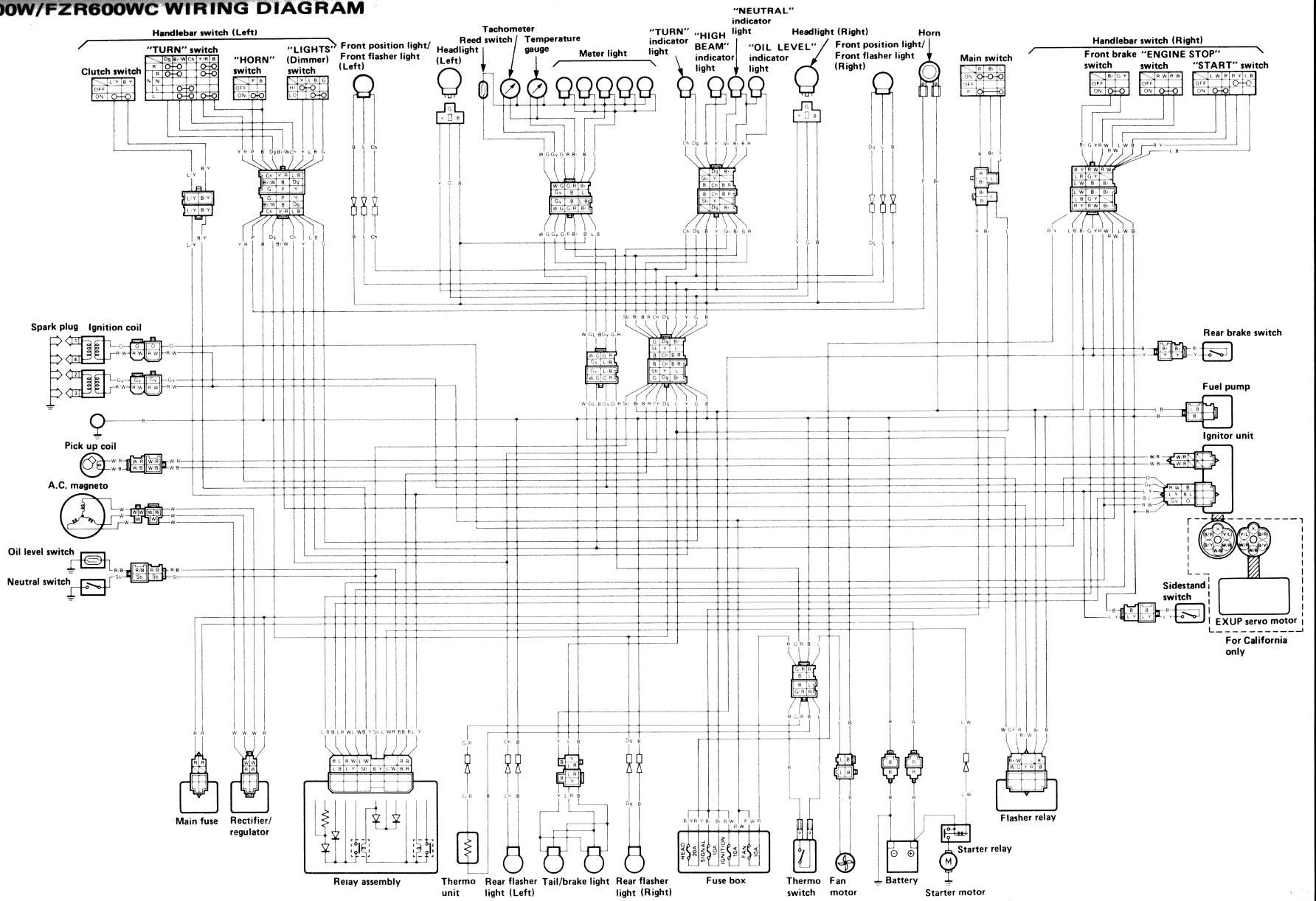
YX600W/YX600WC WIRING DIAGRAM



COLOR CODE

B . . . . . .Black	P . . . . . .Pink	W . . . . . .White	Y/R . . . . .Yellow/Red	W/G . . . . .White/Green
L . . . . . .Blue	Br. . . . . .Brown	B/Y . . . . .Black/Yellow	R/B . . . . .Red/Black	W/R . . . . .White/Red
Y . . . . . .Yellow	Ch . . . . . .Chocolate	B/R . . . . .Black/Red	R/Y . . . . .Red/Yellow	
G . . . . . .Green	Gy . . . . . .Gray	L/B. . . . . .Blue/Black	R/W . . . . .Red/White	
R . . . . . .Red	Dg . . . . . .Dark green	L/Y . . . . .Blue/Yellow	Br/W. . . . .Brown/White	
O . . . . . .Orange	Sb . . . . . .Sky blue	L/W . . . . .Blue/White	W/B . . . . .White/Black	

FZR600W/FZR600WC WIRING DIAGRAM



COLOR CODE

B . . . . . Black	P . . . . . Pink	Sb . . . . . Sky blue	B/R . . . . Black/Red	G/R . . . . Green/Red	Br/W . . . . Brown/White
L . . . . . Blue	O . . . . . Orange	Dg . . . . . Dark green	L/B. . . . . Blue/Black	Y/R . . . . Yellow/Red	W/B . . . . White/Black
G . . . . . Green	Br. . . . . Brown	W. . . . . White	L/Y . . . . Blue/Yellow	R/B . . . . Red/Black	W/G . . . . White/Green
Y . . . . . Yellow	Ch . . . . . Chocolate	B/L. . . . . Black/Blue	L/W . . . . Blue/White	R/Y . . . . Red/Yellow	W/R . . . . White/Red
R . . . . . Red	Gy . . . . . Gray	B/Y . . . . Black/Yellow	G/Y . . . . Green/Yellow	R/W . . . . Red/White	

YAMAHA

FZR600RA
FZR600RAC

SUPPLEMENTARY SERVICE MANUAL

LIT-11616-07-36

3HH-28197-12

FOREWORD

This Supplementary Service Manual has been prepared to introduce new service and new data for the FZR600RA/RAC. For complete information on service procedures, it is necessary to use this Supplementary Service Manual together with following manuals:

FZR600W/WC Service Manual (LIT-11616-06-97)

FZR600RA/600RAC
SUPPLEMENTARY
SERVICE MANUAL
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LIT-11616-07-36

NOTICE

This manual was written by the Yamaha Motor Company primarily for use by Yamaha dealers and their qualified mechanics. It is not possible to put an entire mechanic's education into one manual, so it is assumed that persons using this book to perform maintenance and repairs on Yamaha motorcycles have a basic understanding of the mechanical concepts and procedures inherent in motorcycle repair technology. Without such knowledge, attempted repairs or service to this model may render it unfit to use and/or unsafe.

This model has been designed and manufactured to perform within certain specifications in regard to performance and emissions. Proper service with the correct tools is necessary to ensure that the motorcycle will operate as designed. If there is any question about a service procedure, it is imperative that you contact a Yamaha dealer for any service information changes that apply to this model. This policy is intended to provide the customer with the most satisfaction from his motorcycle and to conform with federal environmental quality objectives.

Yamaha Motor Company, Ltd. is continually striving to improve all models manufactured by Yamaha. Modifications and significant changes in specifications or procedures will be forwarded to all Authorized Yamaha dealers and will, where applicable, appear in future editions of this manual.

NOTE:

This Service Manual contains information regarding periodic maintenance to the emission control system for the FZR600RA/RAC. Please read this material carefully.

TECHNICAL PUBLICATIONS
SERVICE DIVISION
MOTORCYCLE GROUP
YAMAHA MOTOR CO., LTD.

HOW TO USE THIS MANUAL

PARTICULARLY IMPORTANT INFORMATION

This material is distinguished by the following notation.

⚠ The Safety Alert Symbol means ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!

⚠WARNING Failure to follow WARNING instructions could result in severe injury or death to the motorcycle operator, a bystander, or a person inspecting or repairing the motorcycle.

CAUTION: A CAUTION indicates special precautions that must be taken to avoid damage to the motorcycle.

NOTE: A NOTE provides key information to make procedures easier or cleaer.

MANUAL FORMAT

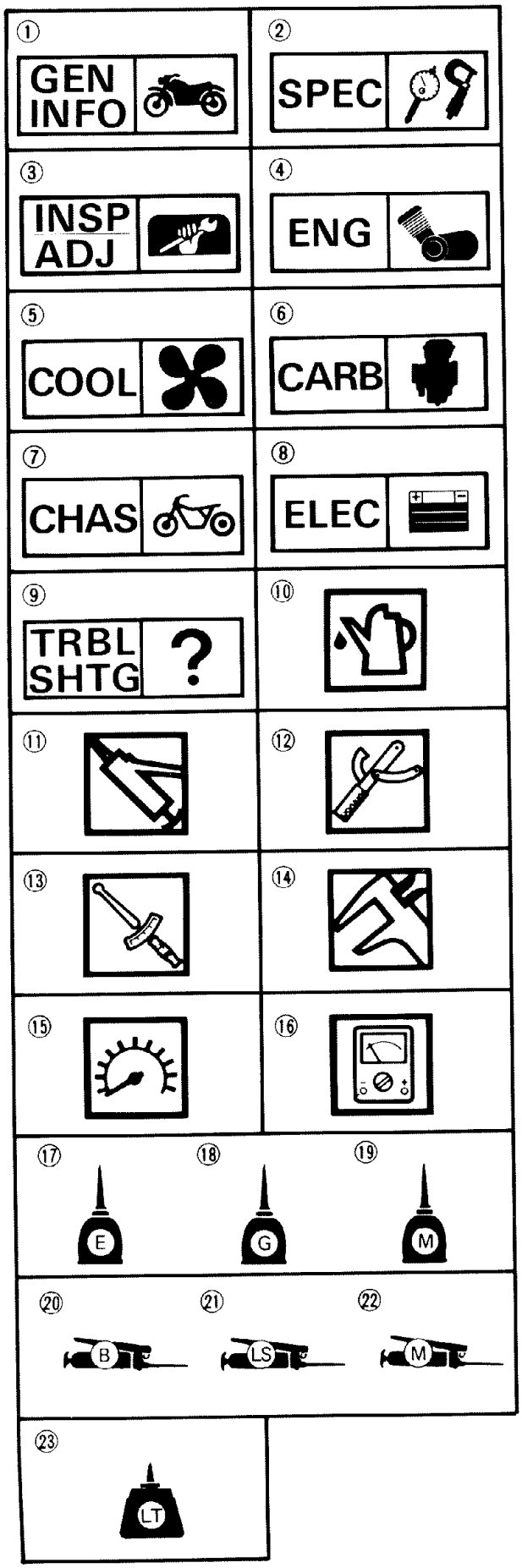
All of the procedures in this manual are organized in a sequential, step-by-step format. The information has been compiled to provide the mechanic with an easy to read, handy reference that contains comprehensive explanations of all disassembly, repair, assembly, and inspection operations.

In this revised format, the condition of a faulty component will precede an arrow symbol and the course of action required will follow the symbol, e.g.,

- Bearings
  Pitting/Damage → Replace.

EXPLODED DIAGRAM

Each chapter provides exploded diagrams before each disassembly section for ease in identifying correct disassembly and assembly procedures.



ILLUSTRATED SYMBOLS (Refer to the illustration)

Illustrated symbols ① to ⑨ are designed as thumb tabs to indicate the chapter's number and content.

① General information
② Specifications
③ Periodic inspection and adjustment
④ Engine
⑤ Cooling system
⑥ Carburetion
⑦ Chassis
⑧ Electrical
⑨ Troubleshooting

Illustrated symbols ⑩ to ⑯ are used to identify the specifications appearing.

⑩ Filling fluid
⑪ Lubricant
⑫ Special tool
⑬ Tightening
⑭ Wear limit, clearance
⑮ Engine speed
⑯ Ω, V, A

Illustrated symbols ⑰ to ㉓ in the exploded diagram indicate grade of lubricant and location of lubrication point.

⑰ Apply engine oil
⑱ Apply gear oil
⑲ Apply molybdenum disulfide oil
⑳ Apply wheel bearing grease
㉑ Apply lightweight lithium-soap base grease
㉒ Apply molybdenum disulfide grease
㉓ Apply locking agent (LOCTITE®)

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ENGINE SERIAL NUMBER 1

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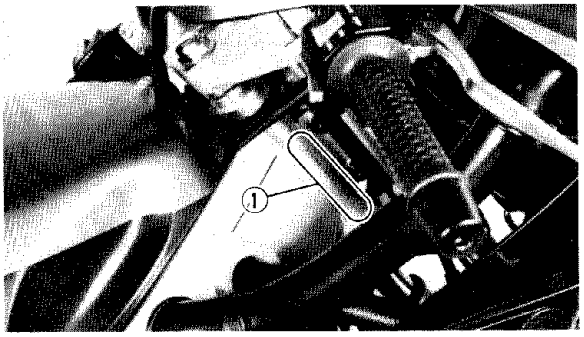
FZR600RA/RAC WIRING DIAGRAM

GENERAL INFORMATION



MOTORCYCLE IDENTIFICATION

VEHICLE IDENTIFICATION NUMBER

The vehicle identification number ① is stamped into the right side of the steering head.

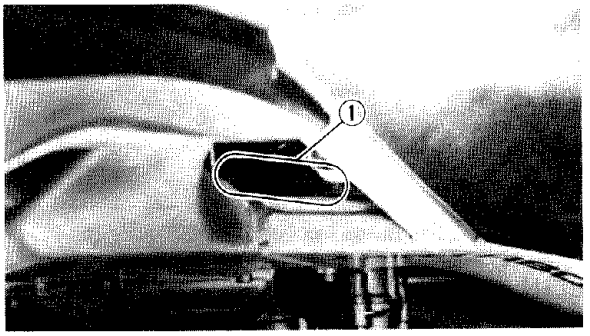
Starting serial number:
FZR600RA (Except for California):
JYA3HHE0 * LA016101
FZR600RAC (For California):
JYA3UUC0 * LA000101

NOTE:

The vehicle identification number is used to identify your motorcycle and may be used to register your motorcycle with the licensing authority in your state.

ENGINE SERIAL NUMBER

The engine serial number ① is stamped into the right side of the engine.



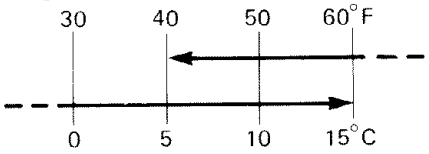
Starting serial number:
FZR600RA (Except for California):
3HH-016101
FZR600RAC (For California):
3UU-000101

NOTE:

- The first three digits of these numbers are for model identifications; the remaining digits are the unit production number.
- Designs and specifications are subject to change without notice.

SPECIFICATIONS

GENERAL SPECIFICATIONS

Model	FZR600RA/RAC	
	FZR600RA	FZR600RAC
Model Code Number	3HH4	3UU1
Vehicle Identification Number	JYA3HHE0 * LA016101	JYA3UUC0 * LA000101
Engine Starting Number	3HH-016101	3UU-000101
Engine Oil Type or Grade:  	YAMALUBE 4 (20W40) or SAE 20W40 type SE/F motor oil YAMALUBE 4 (10W30) or SAE10W30 type SE/F motor oil	
Transmission:		
Primary Reduction System	Spur gear	
Primary Reduction Ratio	82/48 (1.708)	
Secondary Reduction System	Chain drive	
Secondary Reduction Ratio	45/15 (3.000)	
Transmission Type	Constant-mesh, 6-speed	
Operation	Left foot operation	
Gear Ratio 1st	42/15 (2.800)	
2nd	43/22 (1.955)	
3rd	31/20 (1.550)	
4th	28/21 (1.333)	
5th	31/26 (1.192)	
6th	30/27 (1.111)	
Tire:	Front	Rear
Type	Tubeless	Tubeless
Size	110/70 ZR17	140/60 ZR18
Manufacture (Type)	MICHELIN (A59) PIRELLI (MP7)	MICHELIN (M59) PIRELLI (MP7)
Maximum Load*	159 kg (351 lb) 154 kg (340 lb) (FZR600RAC)	
Tire Pressure (Cold tire):	Front	Rear
Up to 90 kg (198 lb) load*	225 kPa (2.25 kg/cm², 32 psi)	250 kPa (2.5 kg/cm², 36 psi)
90 kg (198 lb) ~ Maximum load*	250 kPa (2.5 kg/cm², 36 psi)	290 kPa (2.9 kg/cm², 42 psi)
High speed riding	250 kPa (2.5 kg/cm², 36 psi)	290 kPa (2.9 kg/cm², 42 psi)
*Load is total weight of cargo, rider, passenger, and accessories.		
Shock Absorber:		
Front Shock Absorber	Coil spring, oil damper	
Rear Shock Absorber	Coil-gas spring, gas-oil damper	
Bulb Wattage x Quantity:		
Headlight	12V, 35W/35W x 2	
Tail/Brake Light	12V, 8W/27W x 2	
Front Position Light/ Front Flasher Light	12V, 8W/27W x 2	
Rear Flasher Light	12V, 27W x 2	
Meter Light	12V, 1.7W x 4	

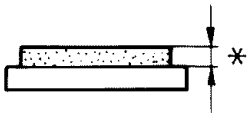
MAINTENANCE SPECIFICATIONS

ENGINE

Model		FZR600RA/RAC	
		FZR600RA	FZR600RAC
Carburetor:			
Type/Manufacture x Quantity		BDST32/MIKUNI x 4	←
I.D. Mark		3HH-01	3UU-00
Main Jet	(M.J.)	#107.5	←
Main Air Jet	(M.A.J.)	#65	←
Jet Needle-Clip Position	(J.N.)	5CFZ7-1	←
Needle Jet	(N.J.)	Y-0	←
Pilot Jet	(P.J.)	#32.5	←
Pilot Outlet Size	(P.O.)	0.8	←
Pilot Air Jet	(P.A.J.)	#132.5	←
Pilot Screw	(P.S.)	Preset	←
Valve Seat Size	(V.S.)	1.2	←
Starter Jet	($G.S_1$)	#52.5	#50
	($G.S_2$)	0.6	0.5
Bypass 1	(B.P. 1)	0.8	←
Bypass 2	(B.P. 2)	0.8	←
Bypass 3	(B.P. 3)	0.8	←
Throttle Valve Size	(Th. V)	#130	←
Fuel Level	(F.L.)	3.8 ~ 4.8 mm (0.15 ~ 0.19 in)	
		Above the float chamber line	
Engine Idle Speed		1,150 ~ 1,250 r/min	
Cooling System:			
Radiator Core Size	Width	350 mm (13.8 in)	
	Height	185 mm (7.3 in)	
	Thickness	32 mm (1.26 in)	
Radiator Cap Opening Pressure		95 ~ 125 kPa (0.95 ~ 1.25 kg/cm², 13.5 ~ 17.8 psi)	
Reservoir Tank Capacity		< 0.28 L (0.25 Imp qt, 0.30 US qt) >	
< To Full Level >			
Water Pump			
Type		Single-suction centrifugal pump	
Reduction Ratio		82/48 x 48/49 (1.673)	

CHASSIS

Model		FZR600RA/RAC
Rear Wheel:		
Type		Cast wheel
Rim Size		MT4.00 x 18
Rim Material		Aluminum
Rim Runout Limit	Radial	2.0 mm (0.08 in)
	Lateral	2.0 mm (0.08 in)

Model	FZR600RA/RAC
Front Disc Brake:	
Type	Dual
Disc Outside Diameter x Thickness	298 x 4 mm (11.7 x 0.16 in)
< Disc Wear Limit >	< 3.5 mm (0.14 in) >
Pad Thickness Inner	5.0 mm (0.20 in)
< Limit > *	< 0.5 mm (0.02 in) >
Pad Thickness Outer	5.0 mm (0.20 in)
< Limit > *	< 0.5 mm (0.02 in) >
	
Master Cylinder Inside Diameter	15.87 mm (0.62 in)
Caliper Cylinder Inside Diameter	33.96 mm (1.34 in)/30.23 mm (1.19 in)
Brake Fluid Type	DOT # 4 only

ELECTRICAL

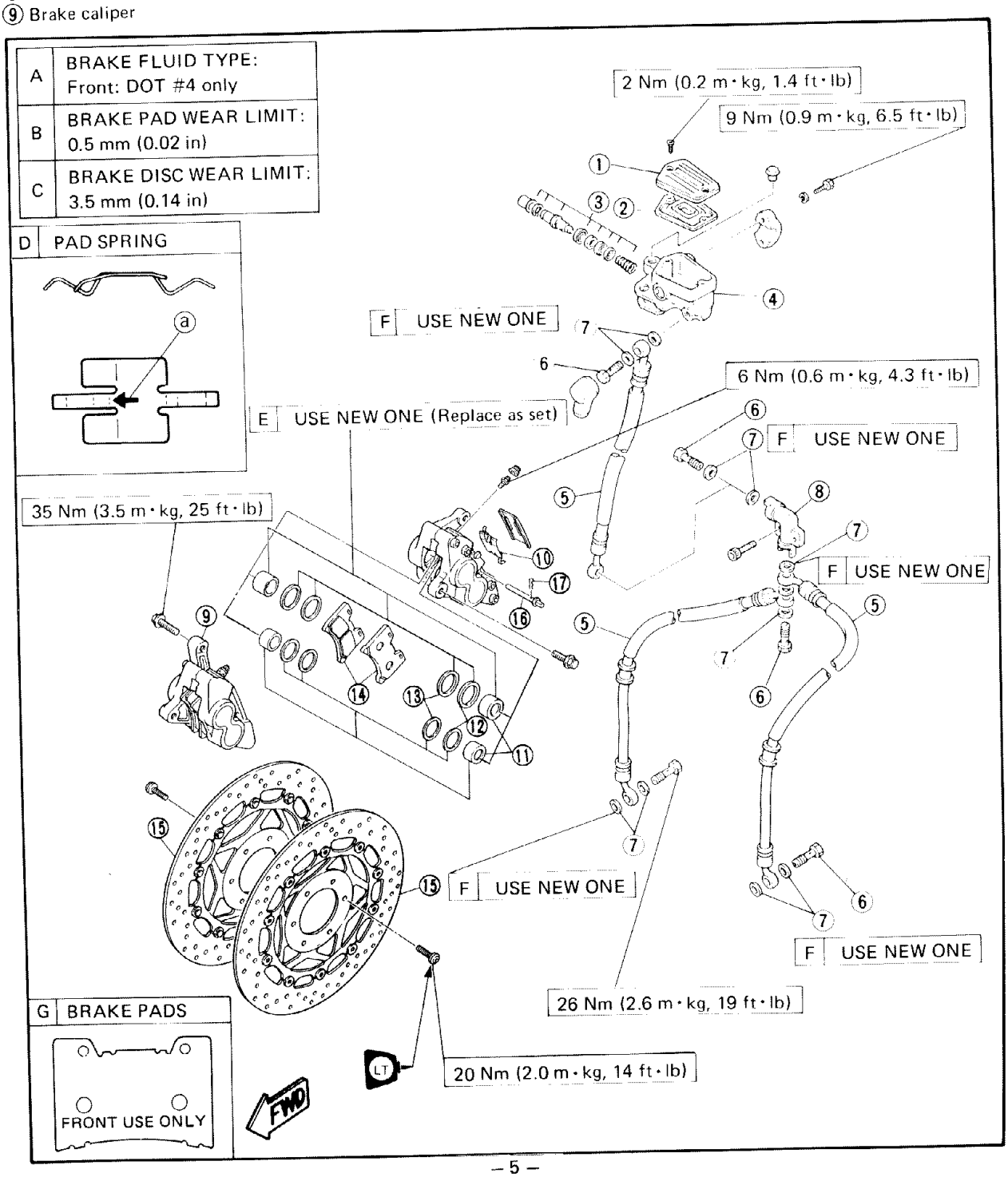
Model	FZR600RA/RAC
Ignition Coil:	
Model/Manufacturr	CM12-39/HITACHI
Minimum Spark Gap	6 mm (0.24 in)
Primary Winding Resistance	1.8 ~ 2.2 Ω at 20°C (68°F)
Secondary Winding Resistance	10.8 ~ 13.2 kΩ at 20°C (68°F)
Spark Plug Cap Resistance	10 kΩ

CHASSIS

FRONT AND REAR BRAKE

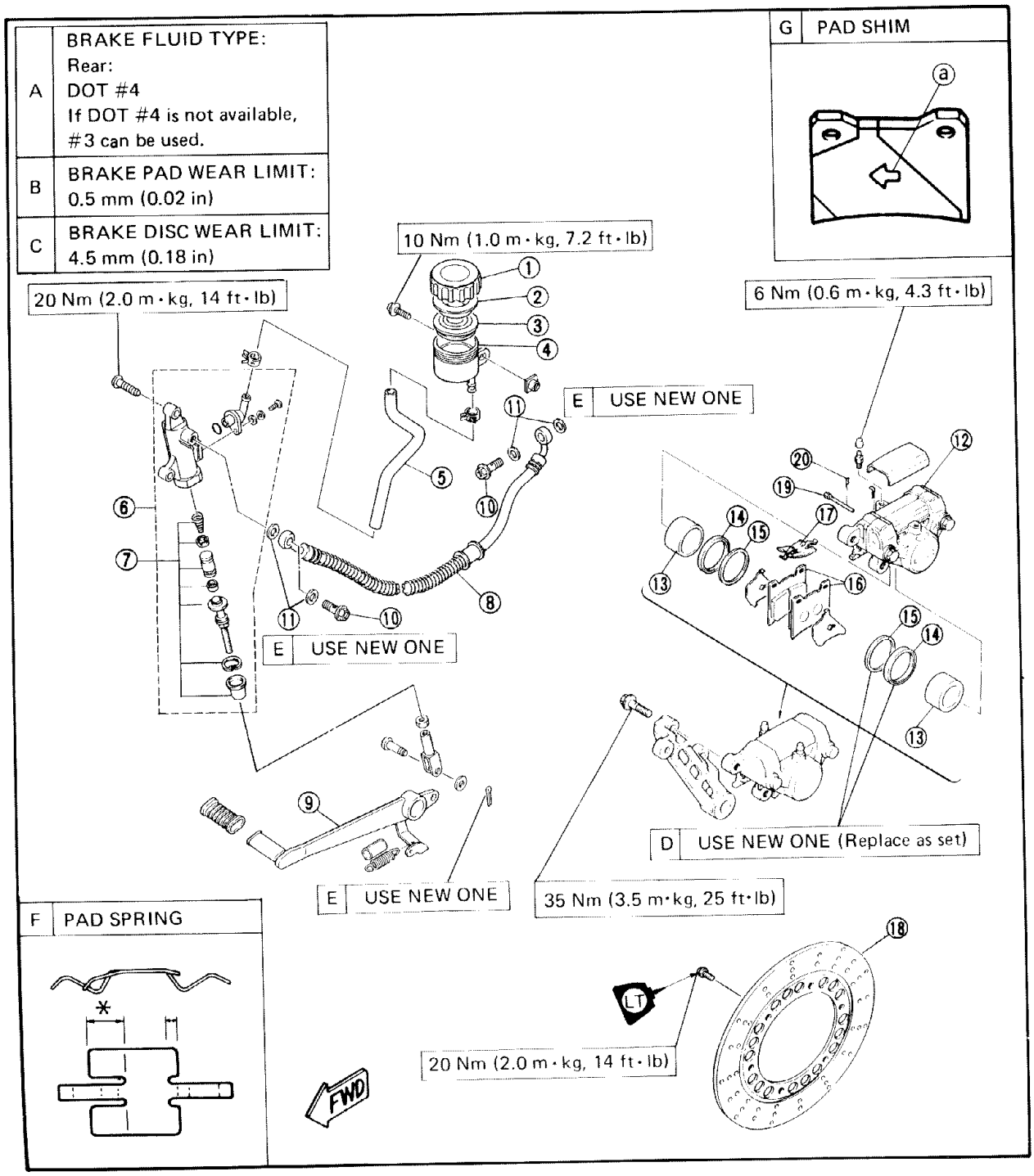
① Master cylinder cap
② Diaphragm
③ Master cylinder kit
④ Master cylinder
⑤ Brake hose
⑥ Union bolt
⑦ Copper washer
⑧ Joint
⑨ Brake caliper
⑩ Pad spring
⑪ Piston
⑫ Piston seal
⑬ Dust seal
⑭ Brake pad assembly
⑮ Brake disc
⑯ Retaining pins
⑰ Retaining clips

[D] The arrow mark ⓐ on the pad spring must pointing the disc rotating direction.
[G] The brake pads with "FRONT USE ONLY" mark should be used for front brake only.



① Reservoir tank cap
② Holder (diaphragm)
③ Diaphragm
④ Reservoir tank
⑤ Reservoir hose
⑥ Master cylinder
⑦ Master cylinder kit
⑧ Brake hose
⑨ Brake pedal
⑩ Union bolt
⑪ Copper washer
⑫ Brake caliper
⑬ Piston
⑭ Piston seal
⑮ Dust seal
⑯ Brake pad
⑰ Pad spring
⑱ Brake disc
⑲ Retaining pins
⑳ Retaining clips

F The longer tangs (✳) of the pad spring must point in the disc rotating direction.
G The allow mark ⓐ on the pad shim must point in the disc rotating direction.



CAUTION:

Disc brake components rarely require disassembly. DO NOT:

- Disassembly components unless absolutely necessary.
- Use solvents on internal brake component.
- Use contaminated brake fluid for cleaning.
- Use only clean brake fluid.
- Allow brake fluid to come in contact with the eyes otherwise eye injury may occur.
- Allow brake fluid to contact painted surfaces or plastic parts otherwise damage may occur.
- Disconnect any hydraulic connection otherwise the entire system must be disassembled, drained, cleaned, and then properly filled and bled after reassembly.

BRAKE PAD REPLACEMENT

NOTE:

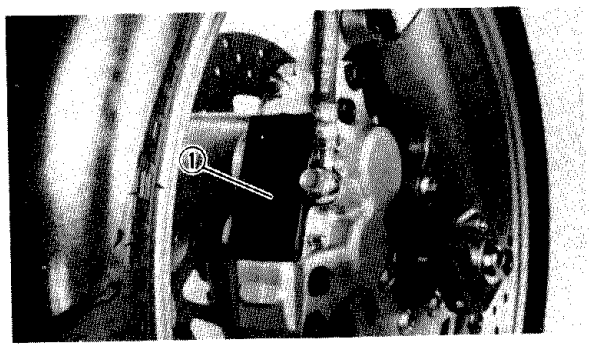
It is not necessary to disassemble the brake caliper and brake hose to replace the brake pads.

⚠WARNING

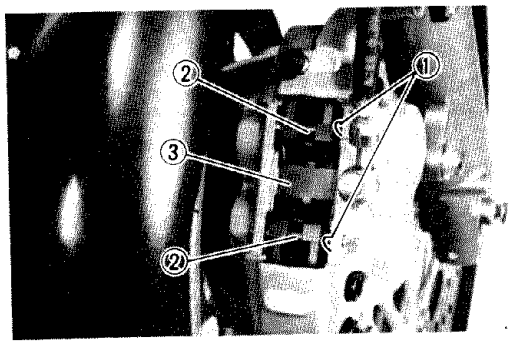
Securely support the motorcycle there is no danger of it falling over.

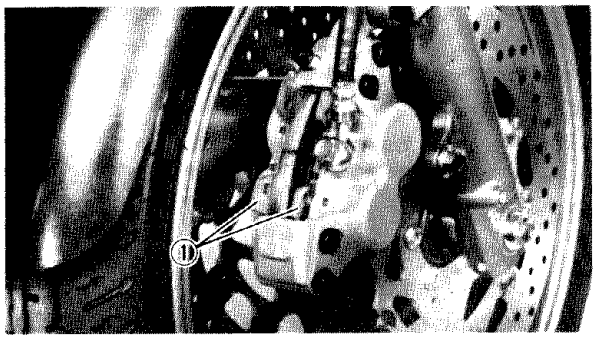
Front Brake

1. Remove:
   - Cover ①



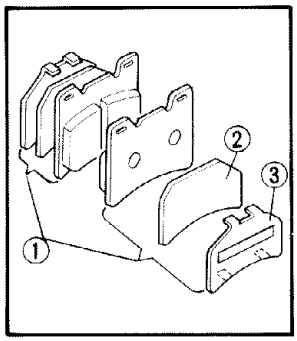
2. Remove:
   - Retaining clips ①
   - Retaining pins ②
   - Pad spring ③

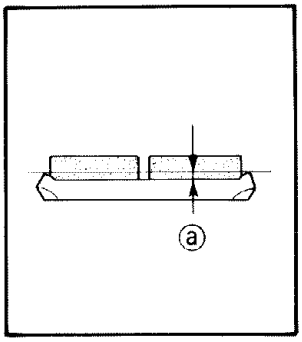




3. Remove:
   • Brake pad assembly ①

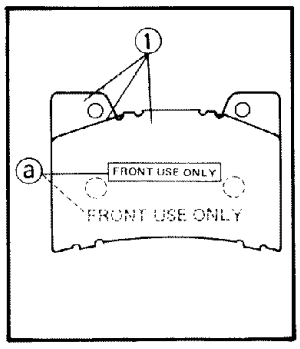
NOTE:
- Replace the pad spring if the pad replacement is required.
- Replace the pad assembly ① if either pad is found to be worn to the wear limit.

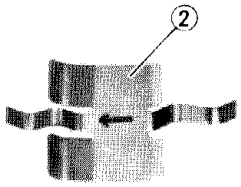




Wear limit ⓐ:
0.5 mm (0.02 in)

② Pad shim
③ Pad shim retainer



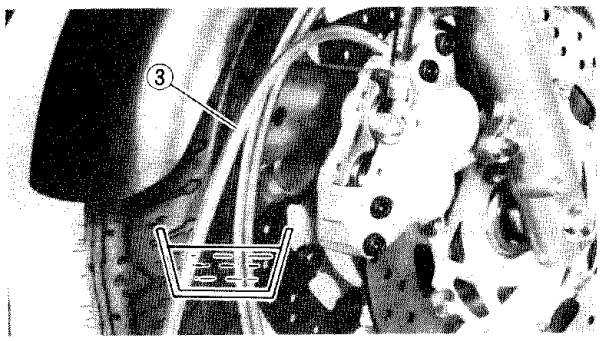


4. Install:
   • Brake pad assembly (new) ①
   • Pad spring (new) ②

NOTE:
The brake pads with "FRONT USE ONLY" mark ⓐ should be used for front brake only.

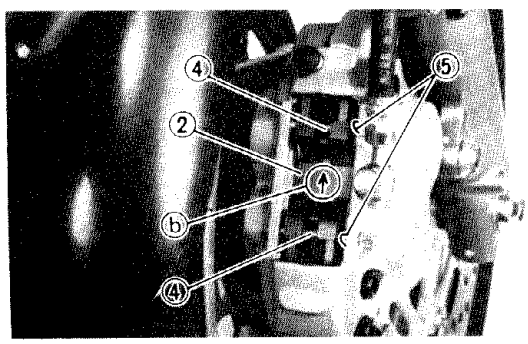
Installation steps:
- Connect a suitable hose ③ tightly to the caliper bleed screw. Then, place the other end of this hose into an open container.
- Loosen the caliper bleed screw and push the piston into the caliper by your finger.
- Tighten the caliper bleed screw.

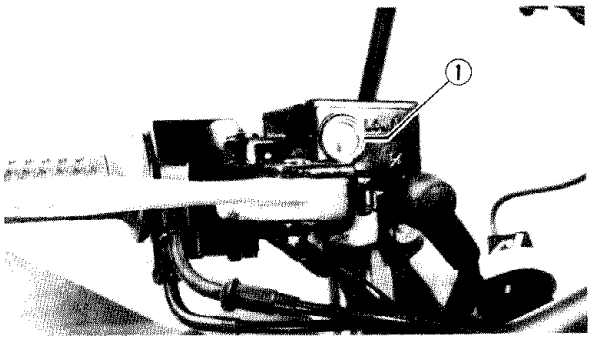
Caliper bleed screw:
6 Nm (0.6 m · kg, 4.3 ft · lb)



- Install the brake pad assembly (new), pad spring (new) ②, retaining pins ④, retaining clips ⑤ and cover.

NOTE:
The arrow mark ⓑ on the pad spring must point in the disc rotating direction.





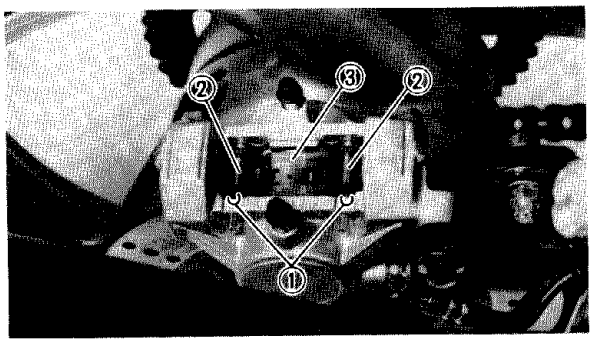
5. Inspect:
   • Brake fluid level
   Refer to the "BRAKE FLUID INSPECTION" section in the CHAPTER 3.

① "LOWER" level line

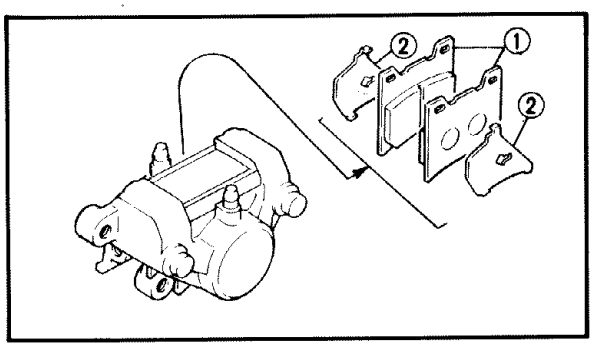
6. Check:
   • Brake lever operation
   A softy or spongy filling → Bleed brake system.
   Refer to the "AIR BLEEDING" section.

Rear Brake

1. Remove:
   • Cover



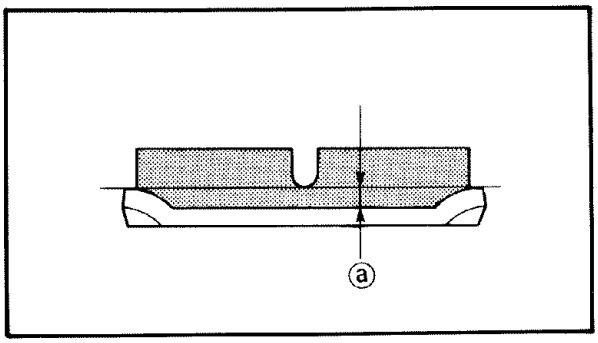
2. Remove:
   • Retaining clips ①
   • Retaining pins ②
   • Pad spring ③



3. Remove:
   • Brake pads ①
   • Pad shims ②

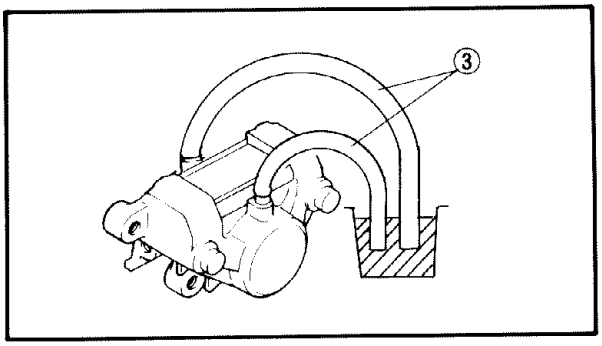
NOTE:

- Replace the pad spring if the pad replacement is required.
- Replace the pads as a set if either is found to be worn to the wear limit.



Wear limit ⓐ :
0.5 mm (0.02 in)

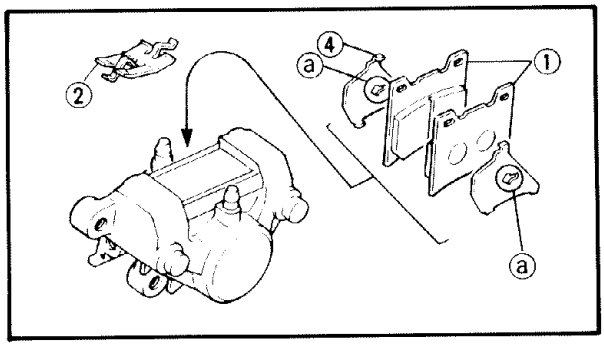
- Replace the pad shim if the pad replacement is required for the rear brake.



4. Install:
   - Brake pads ①
   - Pad springs ②

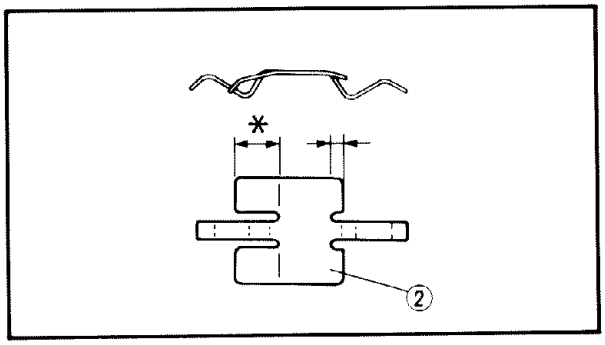
Installation steps:
- Connect a suitable hose ③ tightly to the caliper bleed screw. Then, place the other end of this hose into an open container.
- Loosen the caliper bleed screw and push the piston into the caliper by your finger.
- Tighten the caliper bleed screw.

Caliper bleed screw:
6 Nm (0.6 m · kg, 4.3 ft · lb)



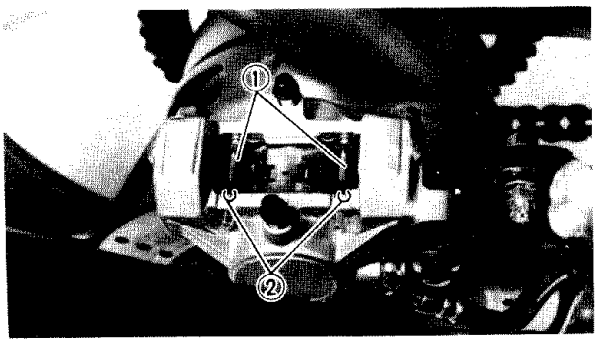
- Install the pad shim (new) ④ to the brake pad (new) ① .

NOTE:
The arrow mark ⓐ on the pad shim must point in the disc rotating direction.

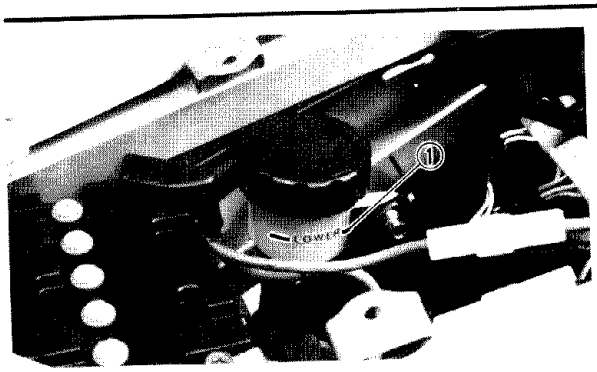


- Install the brake pad (new) and pad spring (new) ② .

NOTE:
The longer tangs (*) of the pad spring must point in the disc rotating direction.



5. Install:
   - Retaining pins ①
   - Retaining clips ②
   - Cover
6. Remove:
   - Seat (front)



7. Inspect:
   • Brake fluid level
   Refer to the "BRAKE FLUID INSPECTION" section in CHAPTER 3.

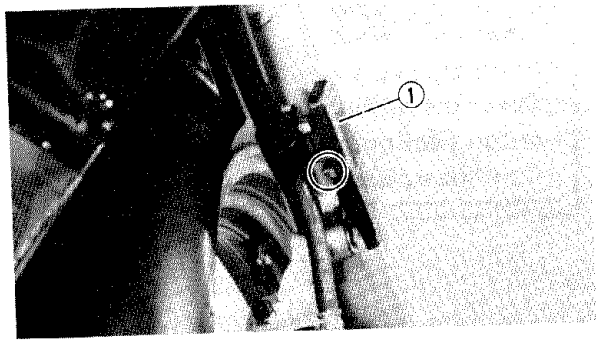
① "LOWER" level line

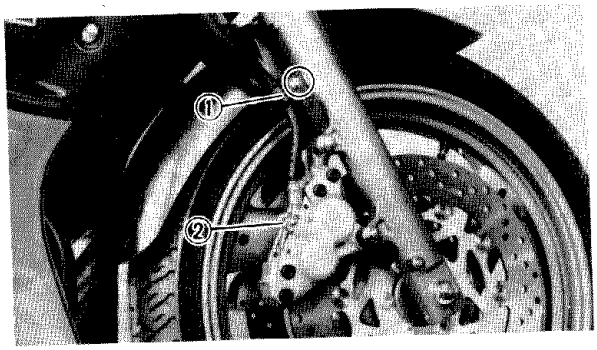
8. Check:
   • Brake pedal operation
   A softy or spongy filling → Bleed brake system.
   Refer to the "AIR BLEEDING" section.
9. Install:
   • Seat (front)
   Refer to the "COWLINGS" section in the CHAPTER 3.

CALIPER DISASSEMBLY

NOTE:
Before disassembling the front brake caliper or rear brake caliper, drain the brake hose, master cylinder, brake caliper and reservoir tank of their brake fluid.

⚠ WARNING
Securely support the motorcycle so there is no danger of it falling over.

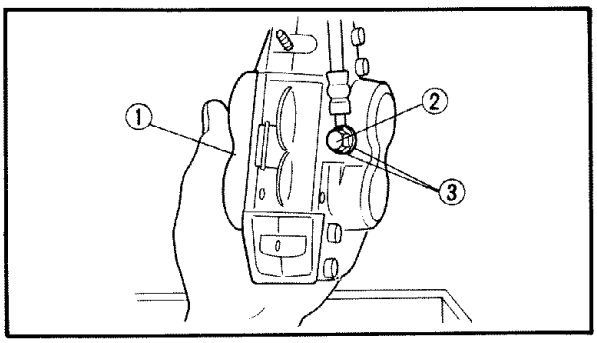




Front Brake

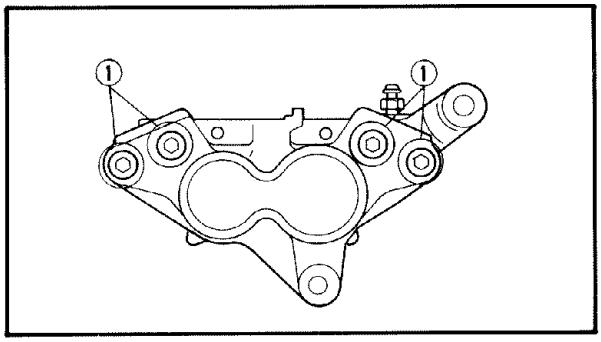
1. Remove:
   • Reflector ①
   • Cover
   • Retaining clips
   • Retaining pins
   • Pad spring
   • Brake pads
   Refer to the "BRAKE PAD REPLACEMENT" section.
2. Remove:
   • Brake hose holder ①
3. Loosen:
   • Union bolt ②

NOTE:
Loosen the union bolt about 1/8 revolution. Do not over turn.

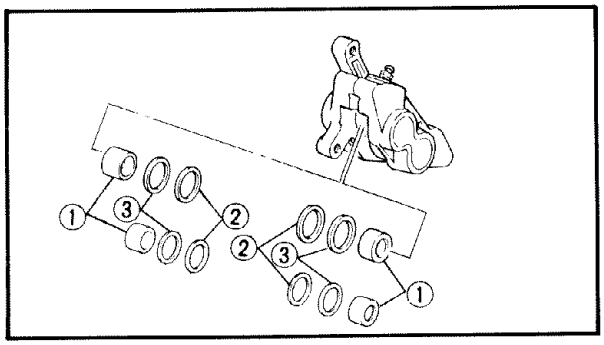


4. Remove:
   - Caliper ①
   - Union bolt ②
   - Copper washers ③

NOTE:
Place the container under the caliper to catch the standing brake fluid.



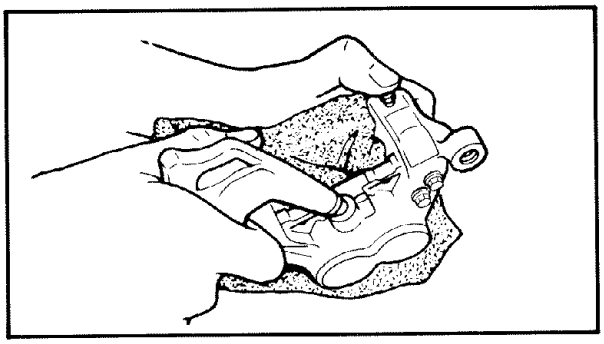
CAUTION:
Do not loosen the bridge bolts ① .



5. Remove:
   - Pistons ①
   - Dust seals ②
   - Piston seals ③

Remove steps:
- Blow compressed air into the tube joint opening to force out the piston from the caliper body.

⚠ WARNING
- **Never try to pry out the piston.**
- **Cover the piston with a rag. Use care so that piston does not cause injury as it is expelled from the cylinder.**



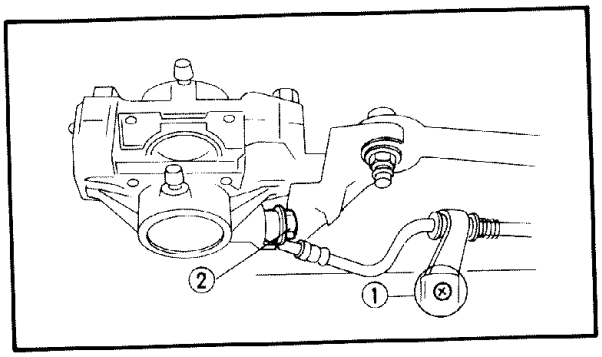
Rear Brake

1. Remove:
   - Seat (front)
   - Side cover (right)

   Refer to the "COWLINGS" section in the CHAPTER 3.

2. Remove:
   - Cover
   - Retaining clips
   - Retaining pins
   - Pad spring
   - Brake pads (with shims)

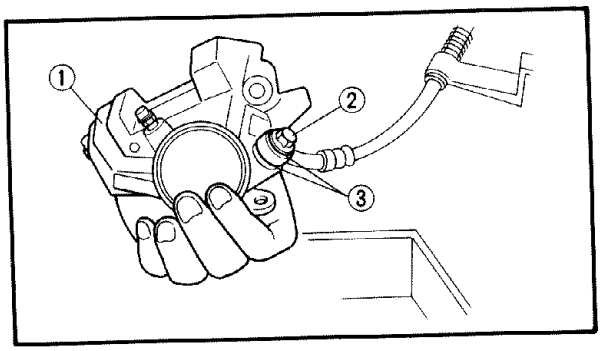
   Refer to the "BRAKE PAD REPLACEMENT" section.



3. Remove:
   - Bolt (brake hose guide) ①

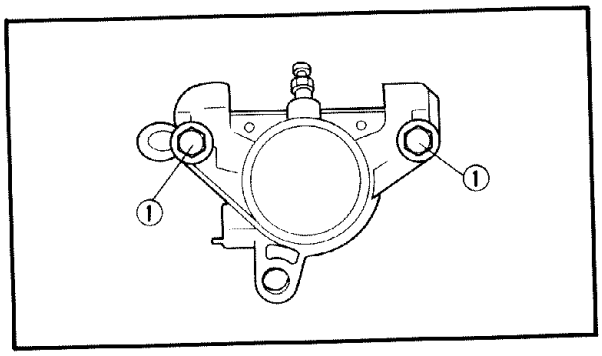
4. Loosen:
   - Union bolt ②

NOTE:
Loosen the union bolt about 1/8 revolution. Do not over turn.

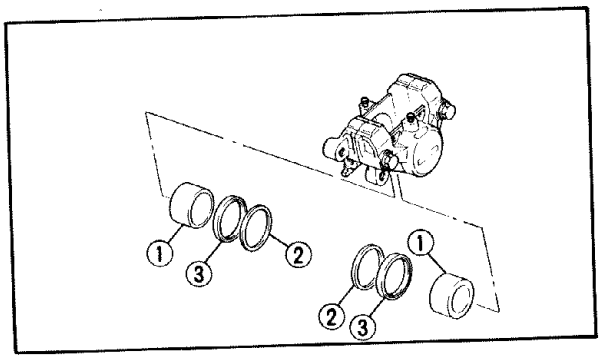


5. Remove:
   - Caliper ①
   - Union bolt ②
   - Copper washers ③

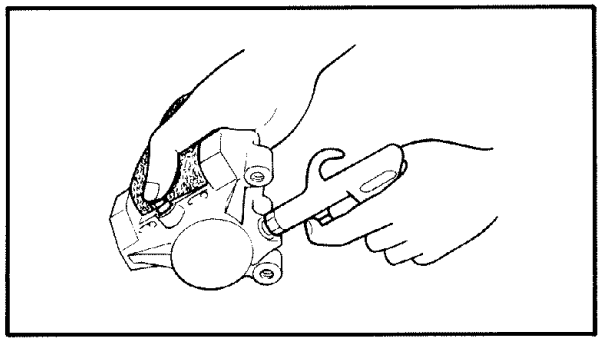
NOTE:
Place the container under the caliper to catch the standing brake fluid.



CAUTION:
Do not loosen the bridge bolts ①.



6. Remove:
   - Pistons ①
   - Dust seals ②
   - Piston seals ③

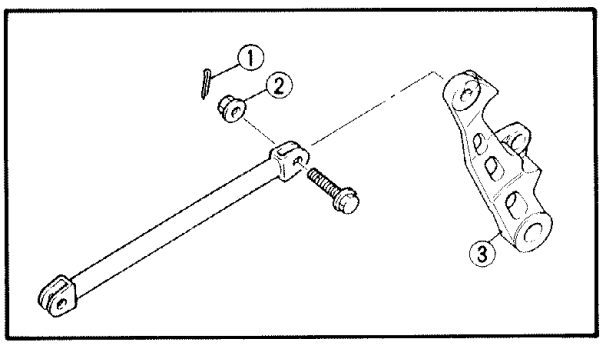


Removal steps:

- Blow compressed air into the tube joint opening to force out the piston from the caliper body.

⚠ WARNING

- **Never try to pry out the piston.**
- **Cover the piston with a rag. Use care so that piston does not cause injury as it is expelled from the cylinder.**



7. Remove:
   - Refer wheel
     Refer to "REAR WHEEL" section.
   - Cotter pin ①
   - Nut (tension bar) ②
   - Caliper bracket ③

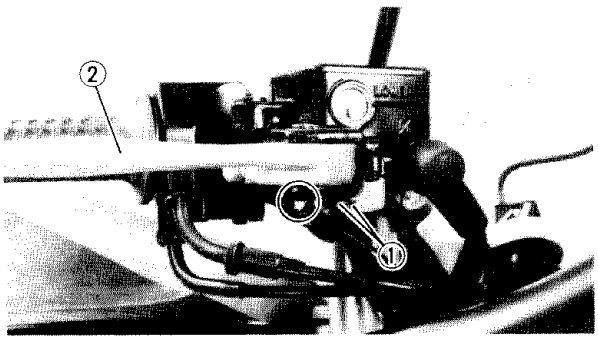
MASTER CYLINDER DISASSEMBLY

NOTE:

Before disassembling the front or rear brake master cylinders, drain the brake hose, master cylinder, brake caliper and reservoir tank of their brake fluid.

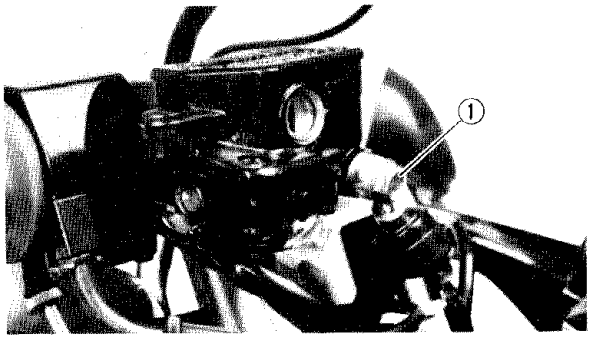
⚠ WARNING

Securely support the motorcycle so there is no danger of it falling over.



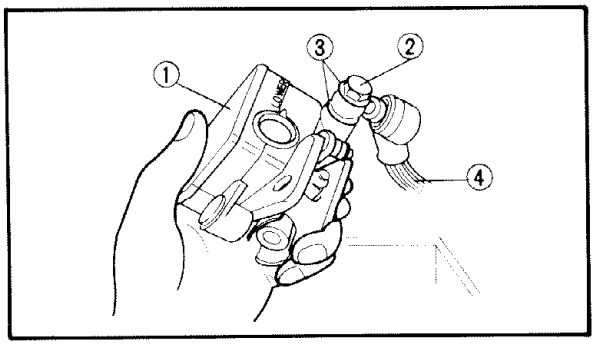
Front Brake

1. Remove:
   - Brake switch leads ①
   - Brake lever ②
   - Return spring (brake lever)



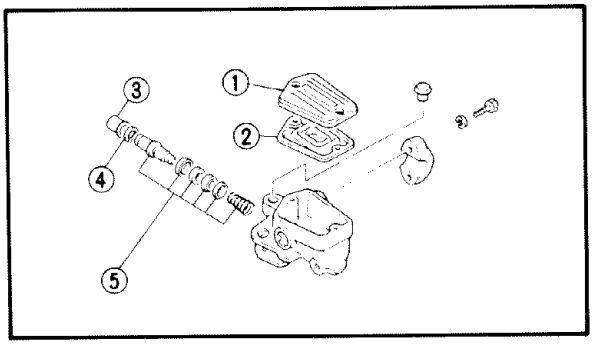
2. Loosen:
   - Union bolt ①

NOTE:
Loosen the union bolt about 1/8 revolution. Do not over turn.



3. Remove:
   - Master cylinder ①
   - Union bolt ②
   - Copper washers ③
   - Brake hose ④

NOTE:
Place the container under the master cylinder to catch the standing brake fluid.



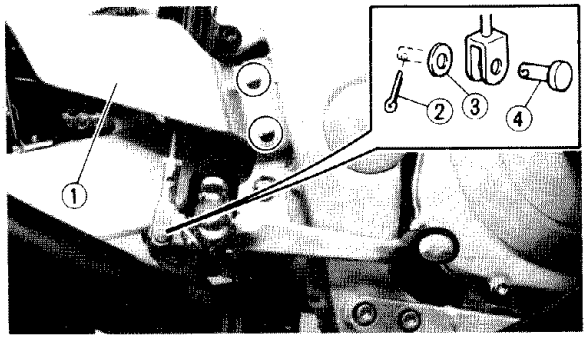
4. Remove:
   - Cap (master cylinder) ①
   - Diaphragm ②
   - Dust boot ③
   - Circlip ④
   - Master cylinder kit ⑤

NOTE:
Place the container under the master cylinder.

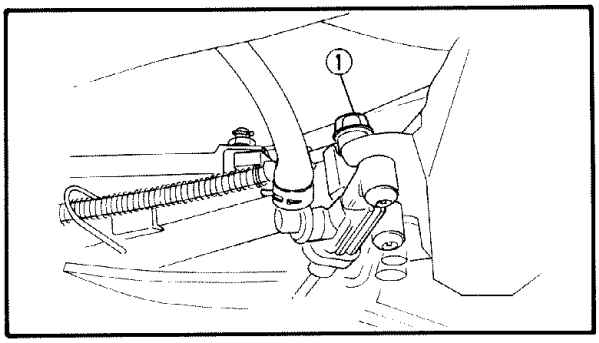
Rear Brake

1. Remove:
   - Seat (front)
   - Side cover (right)

   Refer to the "COWLINGS REMOVAL AND INSTALLATION" section in the CHAPTER 3.

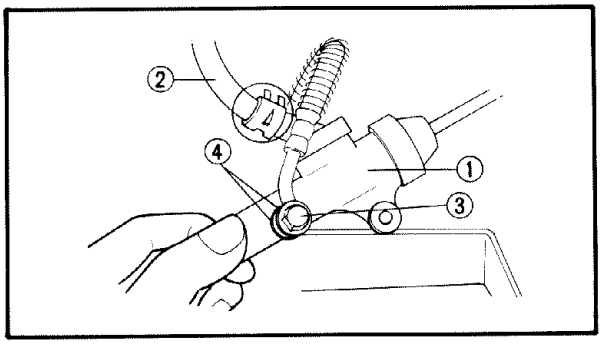


2. Remove:
   - Plate ①
   - Cotter pin ②
   - Washer ③
   - Clevis pin ④



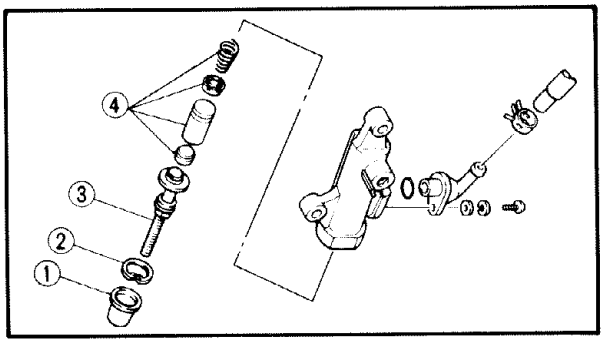
3. Loosen:
   - Union bolt ①

NOTE:
Loosen the union bolt about 1/8 revolution. Do not over turn.



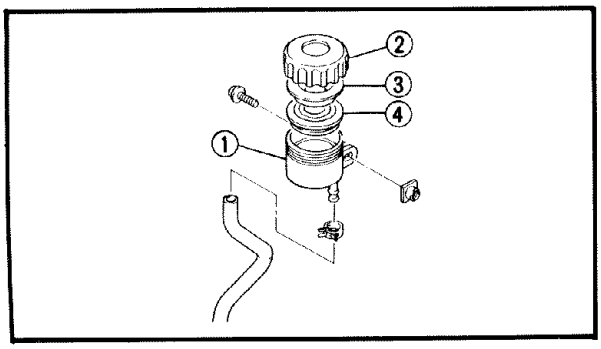
4. Remove:
   - Master cylinder ①
5. Disconnect:
   - Brake hose (reservoir tank — master cylinder) ②
6. Remove:
   - Union bolt ③
   - Copper washers ④

NOTE:
Place the container under the master cylinder to catch the standing brake fluid.



7. Remove:
   - Dust boot ①
   - Circlip ②
   - Push rod ③
   - Master cylinder kit ④

NOTE:
Place the container under the master cylinder.



8. Remove:
   - Reservoir tank ①
     (from flame)
   - Cap (reservoir tank) ②
   - Holder (diaphragm) ③
   - Diaphragm ④

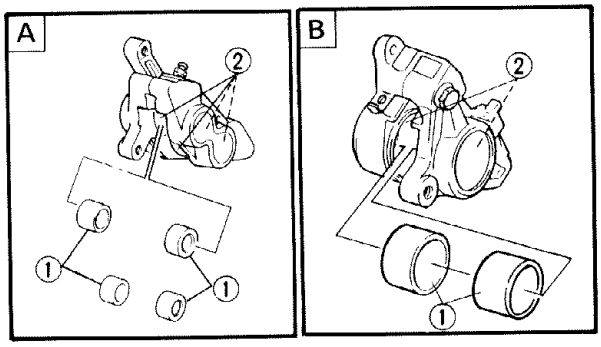
NOTE:
Place the container under the reservoir tank.

INSPECTION AND REPAIR

Recommended brake component replacement schedule:	
Brake pads	As required
Piston seal, dust seal	Every two years
Brake hoses	Every four years
Brake fluid	Replace only when brakes are disassembled

⚠ WARNING

All internal parts should be cleaned in new brake fluid only. Do not use solvents will cause seals to swell and distort.

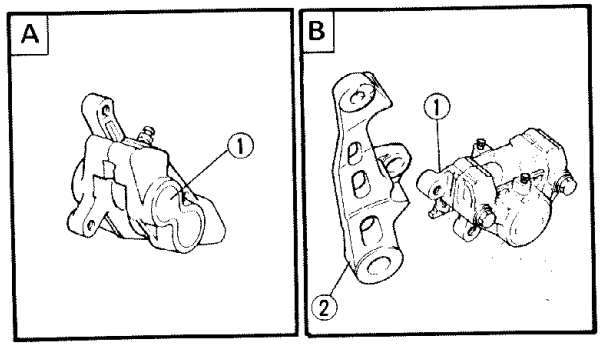


1. Inspect:
   - Caliper piston ①
     Scratches/Rust/Wear → Replace caliper assembly.
   - Caliper cylinder ②
     Wear/Scratches → Replace caliper assembly.

[A] Front
[B] Rear

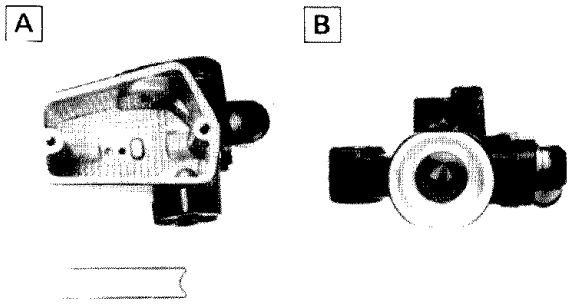
⚠ WARNING

Replace the piston seal and dust seal whenever a caliper is disassembled.



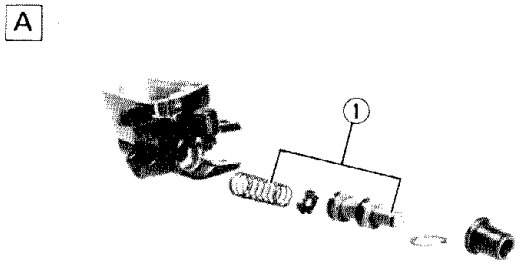
2. Inspect:
   - Caliper body ①
   - Caliper bracket ②
     Cracks/Damage → Replace.
   - Oil delivery passage (caliper body)
     Blow out with compressed air.

[A] Front
[B] Rear

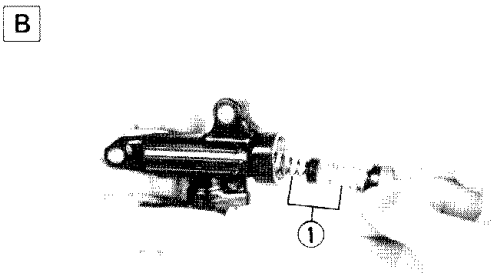


3. Inspect:
   - Master cylinder
     Wear/Scratches → Replace the caliper assembly.
   - Master cylinder body
     Cracks/Damage → Replace.
   - Oil delivery passage (master cylinder body)
     Blow out with compressed air.

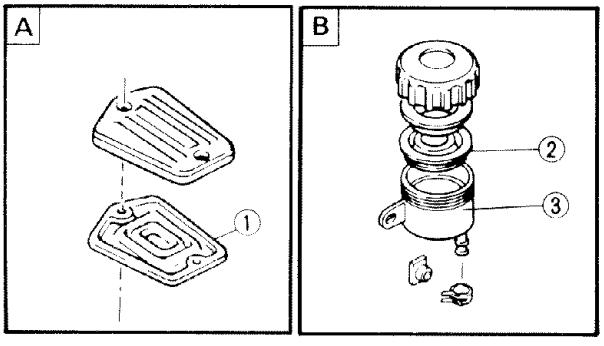
[A] Front
[B] Rear



4. Inspect:
   - Master cylinder kit ①
     Scratches/Wear/Damage → Replace, as a set.

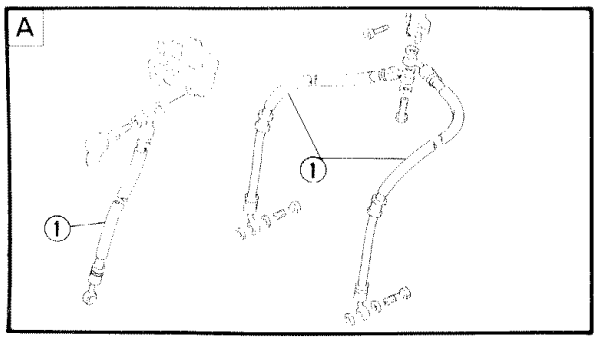


[A] Front
[B] Rear

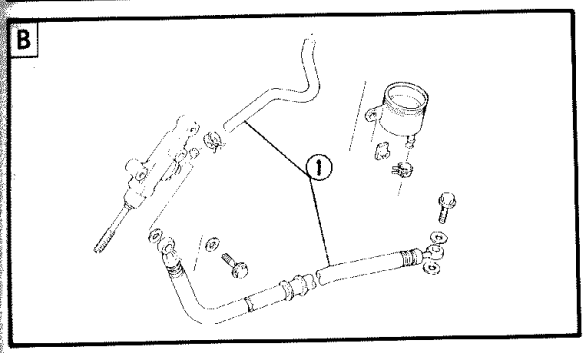


5. Inspect:
   - Diaphragm (front) ①
   - Diaphragm (rear) ②
     Wear/Damage → Replace.
   - Reservoir tank ③
     Cracks/Damage → Replace.

[A] Front
[B] Rear



6. Inspect:
   - Brake hoses ①
     Cracks/Wear/Damage → Replace.

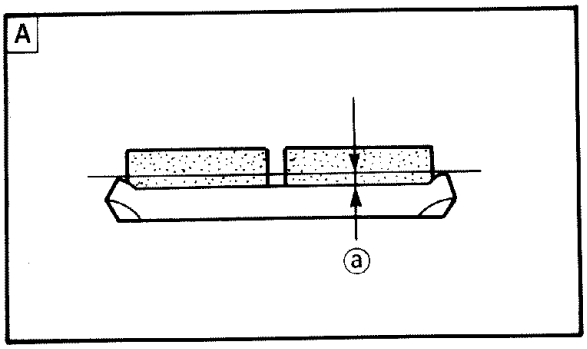


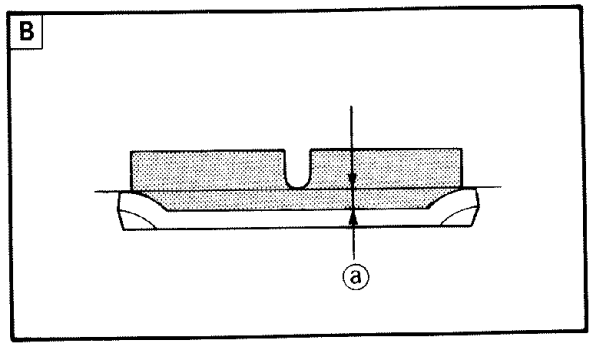
A Front
B Rear

7. Measure:
   • Brake pads (thickness)
   Out of specification → Replace.

Wear limit ⓐ:
0.5 mm (0.02 in)

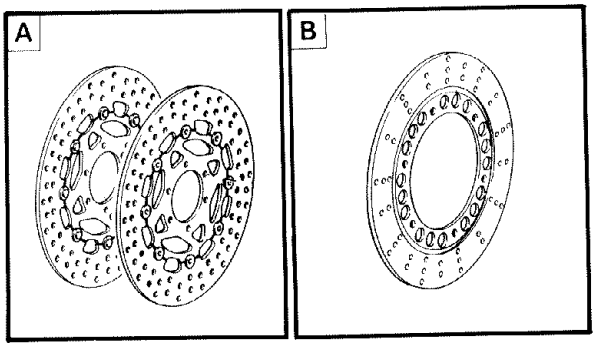
NOTE:
- Replace the pad spring as a set if pad replacement is required.
- Replace the pads as a set if either if found to be worn to the wear limit.



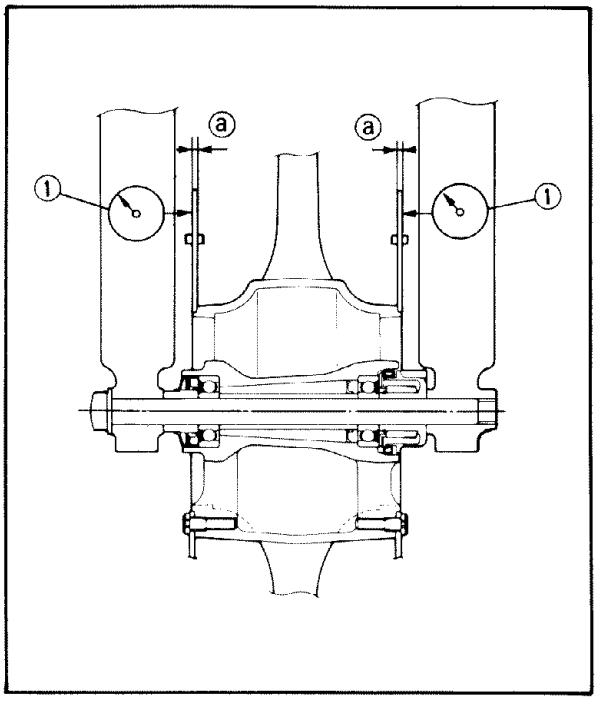


A Front
B Rear

8. Inspect:
   • Brake discs (front and rear)
   Galling/Damage → Replace.



A Front
B Rear



9. Measure:
   - Brake disc deflection
     Out of specification → Inspect wheel runout.
     If wheel runout is in good condition, replace the brake disc(s).

Maximum deflection:
0.5 mm (0.02 in)

   - Brake disc thickness ⓐ
     Out of specification → Replace.

Minimum thickness:
front: 3.5 mm (0.14 in)
rear: 4.5 mm (0.18 in)

① Dial gauge

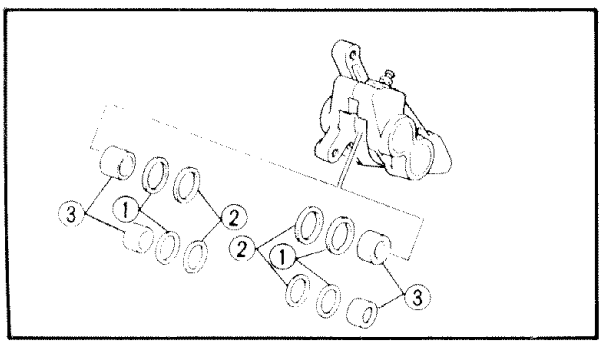
NOTE:
Tighten the bolts (brake disc) in stage using a crisscross pattern.

Bolt (brake disc):
20 Nm (2.0 m · kg, 14 ft · lb)
LOCTITE®

CALIPER ASSEMBLY

⚠ WARNING

- **All internal parts should be cleaned in new brake fluid only.**
- **Internal parts should be lubricated with brake fluid when installed.**
- **Replace the piston seal and dust seal whenever a caliper is disassembled.**

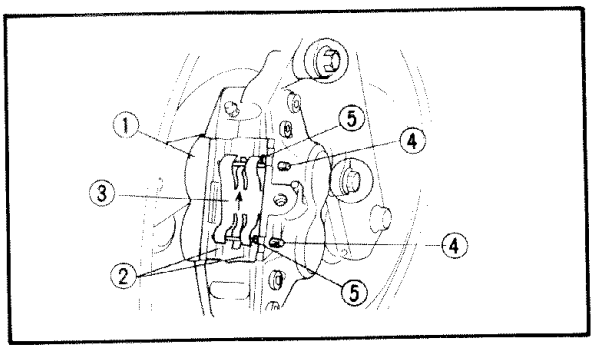


Front brake

1. Install:
   - Piston seal ①
   - Dust seal ②
   - Caliper piston ③

⚠ WARNING

Always use new piston seal and dust seal.

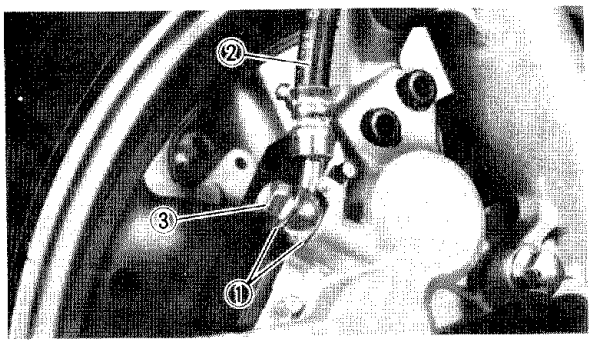


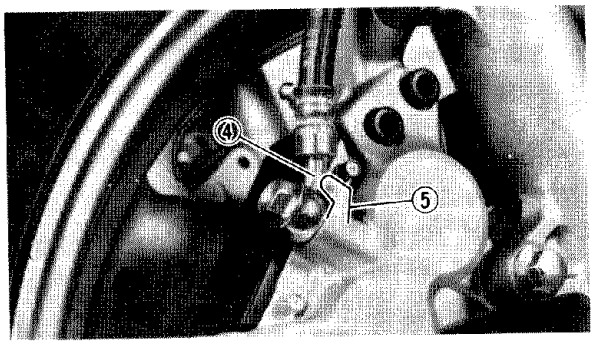
2. Install:
   - Brake calipers ①

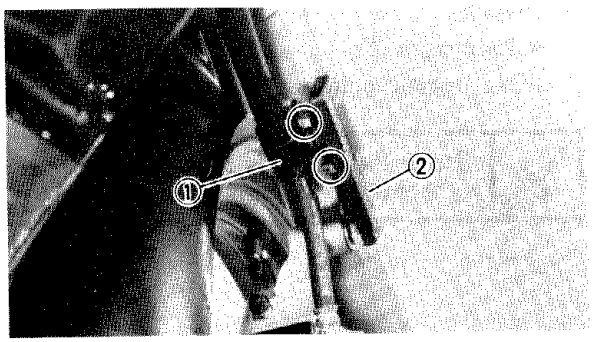
	Bolt (brake caliper): **35 Nm (3.5 m · kg, 25 ft · lb)**

   - Brake pad assembly ②
   - Pad spring ③
   - Retaining pins ④
   - Retaining clips ⑤
   - Cover

   Refer to "BRAKE PAD REPLACEMENT" section.







3. Install:
   - Copper wahsers ①
   - Brake hose ②
   - Union bolt ③

   (onto brake caliper)

	Union bolt: **26 Nm (2.6 m · kg, 19 ft · lb)**

CAUTION:

When installing the brake hose, lightly touch the pipe portion ④ of the brake hose with the projection ⑤ on brake caliper.

⚠ WARNING

- **Proper hose routing is essential to insure safe motorcycle operation. Refer to "CABLE ROUTING".**
- **Always use new copper washers.**

4. Install:
   - Brake hose holder ①
   - Reflector ②

5. Fill:
   - Master cylinder tank

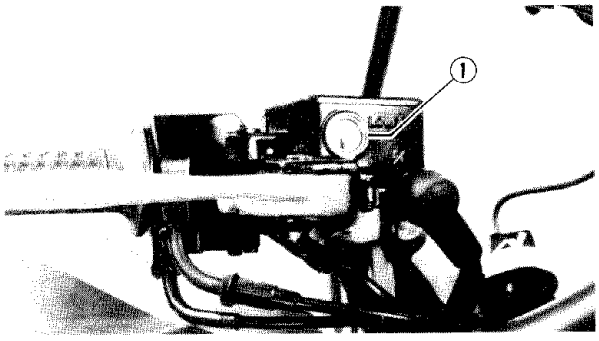
	Recommended brake fluid: DOT #4 only

CAUTION:

Brake fluid may erode painted surfaces or plastic parts. Always clean up spilled fluid immediately.

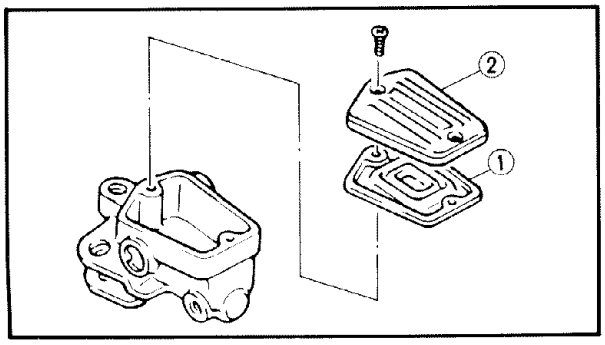
⚠ WARNING

- **Use only the designated quality brake fluid. otherwise, the rubber seals may deteriorate, causing leakage and poor brake performance.**
- **Refill with the same type of brake fluid; mixing fluids may result in a harmful chemical reaction and lead to poor performance.**
- **Be careful that water does not enter the master cylinder when refilling. Water will significantly lower the boiling point of the fluid and may result in vapor lock.**



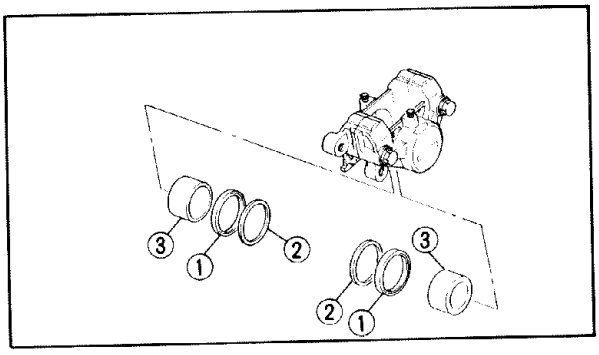
6. Air bleed:
   - Brake system
     Refer to "AIR BLEEDING" section in the CHAPTER 3.
7. Inspect:
   - Brake fluid level
     Refer to the "BRAKE FULID INSPECTION" section in the CHAPTER 3.

① "LOWER" level line



8. Install:
   - Diaphragm ①
   - Cap (master cylinder) ②

	Screw (master cylinder cap): 2 Nm (0.2 m · kg, 1.4 ft · lb)

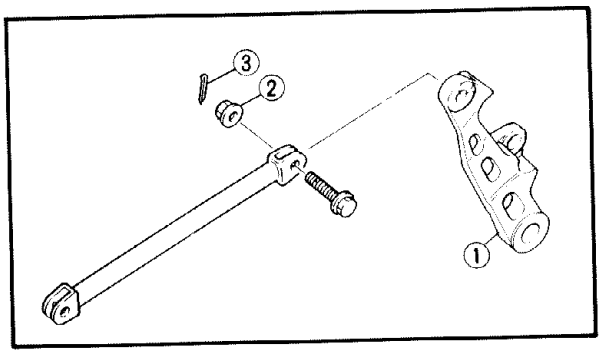


Rear brake

1. Install:
   - Piston seals ①
   - Dust seals ②
   - Pistons ③

⚠ WARNING

Always use new piston seal and dust seal.



2. Install:
   - Caliper bracket ①
   - Nut (tension bar) ②
   - Cotter pin ③

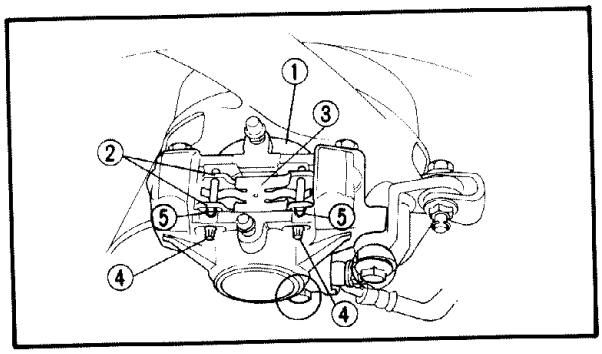
⚠ WARNING

Always use a new cotter pin.

	Nut (tensionbar — caliper bracket): 23 Nm (2.3 m · kg, 17 ft · lb)

3. Install:
   - Rear wheel

   Refer to the "REAR WHEEL" section.

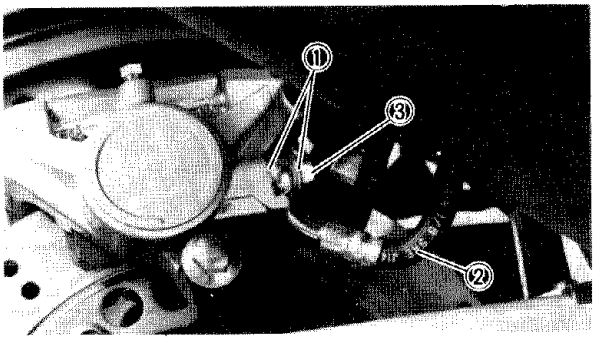


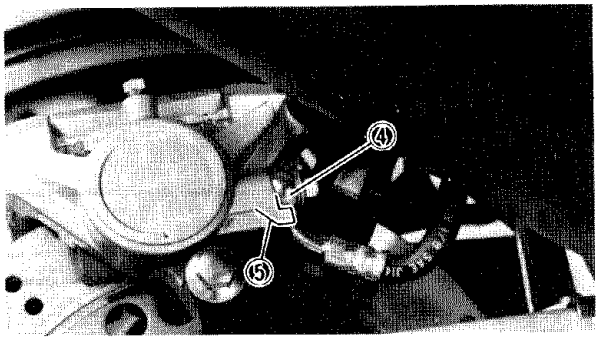
4. Install:
   - Brake caliper (rear) ①

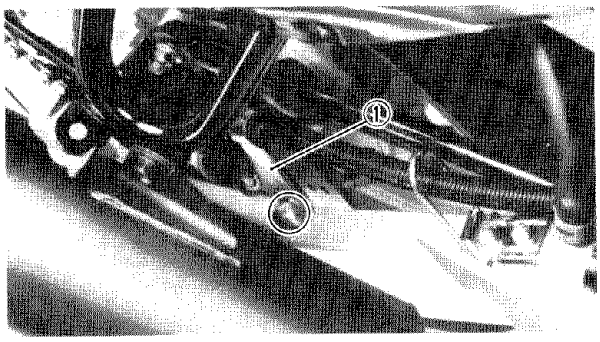
	Brake caliper (rear): 35 Nm (3.5 m · kg, 25 ft · lb)

   - Brake pads (with shims) ②
   - Pad spring ③
   - Retaining pins ④
   - Retaining clips ⑤
   - Cover

   Refer to "BRAKE PAD REPLACEMENT" section.







5. Install:
   - Copper washers ①
   - Brake hose ②
   - Union bolt ③

Union bolts:
26 Nm (2.6 m · kg, 19 ft · lb)

CAUTION:

When installing the brake hose, lightly touch the pipe portion ④ of the brake hose with the projection ⑤ on the brake caliper.

⚠ WARNING

- Proper hose routing is essential to insure safe motorcycle operation. Refer to "CABLE ROUTING".
- Always use new copper washers.

6. Install:
   - Brake hose holder ①

7. Fill:
   - Reservoir tank

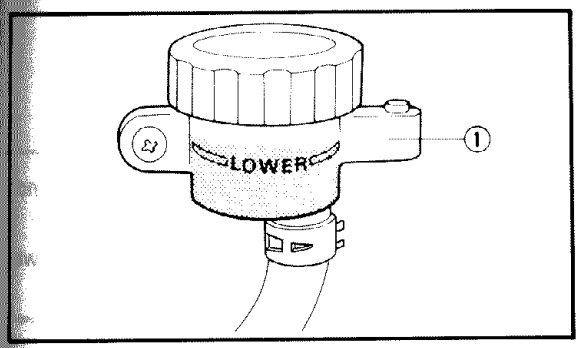
Recommended brake fluid:
DOT #4
If DOT #4 is not available, #3 can be used.

CAUTION:

Brake fluid may erode painted surfaces or plastic parts. Always clean up spilled fluid immediately.

⚠ WARNING

- Use only the designated quality brake fluid: otherwise, the rubber seals may deteriorate, causing leakage and poor brake performance.
- Refill with the same type of brake fluid; mixing fluids may result in a harmful chemical reaction and lead to poor performance.
- Be careful that water does not enter the master cylinder when refilling. Water will significantly lower the boiling point of the fluid and may result in vapor lock.

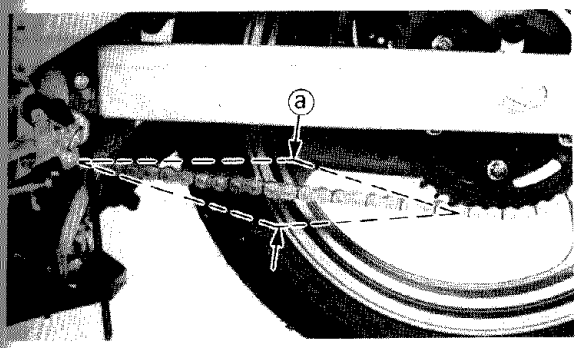


8. Air bleed:
   - Brake system

   Refer to "AIR BLEEDING" section in the CHAPTER 3.
9. Inspect:
   - Brake fluid level

   Refer to the "BRAKE FLUID INSPECTION" section in the CHAPTER 3.

① "LOWER" level line



10. Adjust:
    - Drive chain slack ⓐ

Drive chain slack:
20 ~ 30 mm (0.8 ~ 1.2 in)

Refer to the "DRIVE CHAIN SLACK ADJUSTMENT" section in the CHAPTER 3.

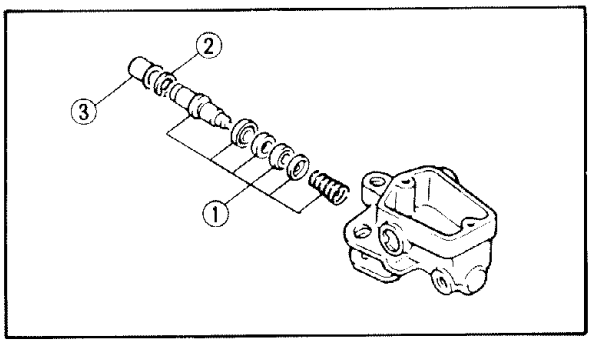
11. Install:
    - Side cover (right)
    - Seat

    Refer to "COVERS" section in the CHAPTER 3.

MASTER CYLINDER ASSEMBLY

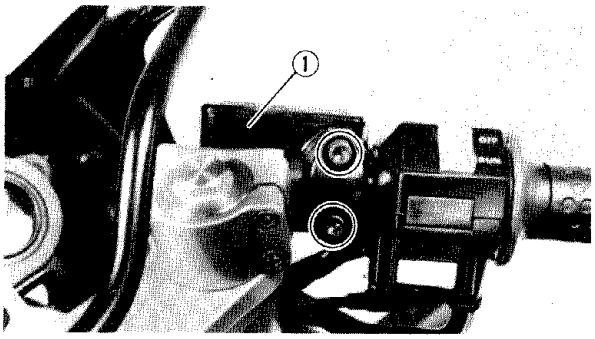
⚠ WARNING

- **All internal parts should be cleaned in new brake fluid only.**
- **Internal parts should be lubricated with brake fluid when installed.**



Front Brake

1. Install:
   - Master cylinder kit ①
   - Circlip ②
   - Dust boot ③

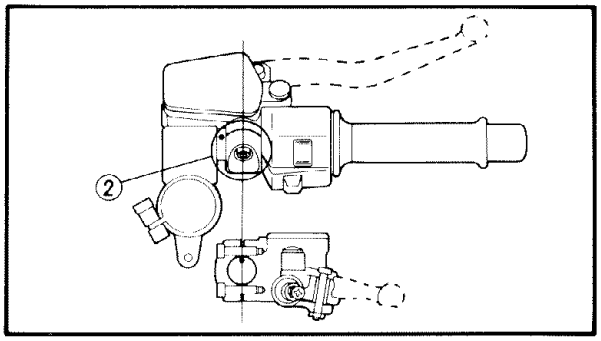


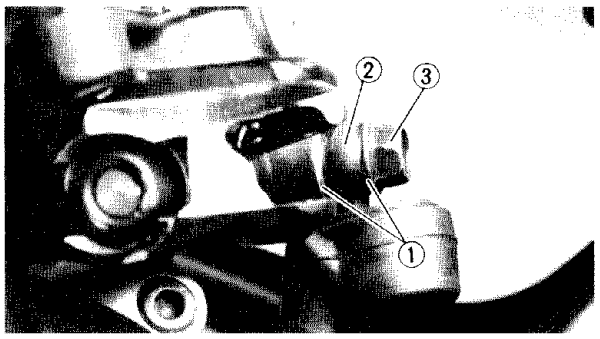
2. Install:
   - Master cylinder ①

CAUTION:

- **Align the end of the holder with the punch mark ② on the handlebar.**
- **Tighten first the upper bolt, then the lower bolt.**

	Bolts (master cylinder holder): 9 Nm (0.9 m · kg, 8.5 ft · lb)



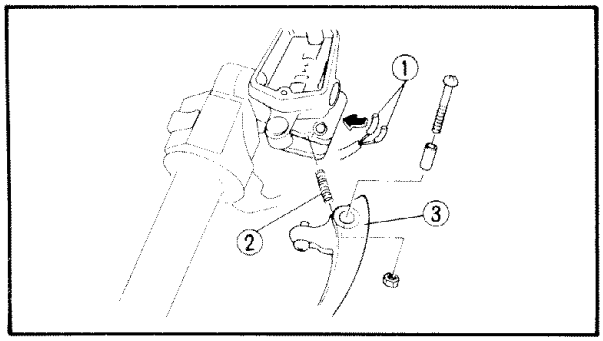


3. Install:
   - Copper washers ①
   - Brake hose ②
   - Union bolts ③

	Union bolts: 26 Nm (2.6 m · kg, 19 ft · lb)

⚠WARNING

- **Proper hose routing is essential to insure safe motorcycle operation. Refer to the "CABLE ROUTING".**
- **Always use new copper washers.**



4. Connect:
   - Brake switch leads ①
5. Install:
   - Return spring (brake lever) ②
   - Brake lever ③

NOTE:

Apply the lithium soap base grease to the brake lever pivot.

6. Fill:
   - Master cylinder tank

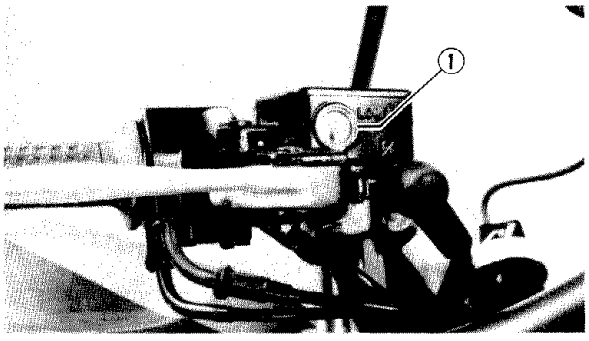
Recommended brake fluid:
DOT #4 only

CAUTION:

Brake fluid may erode painted surfaces or plastic parts. Always clean up spilled fluid immediately.

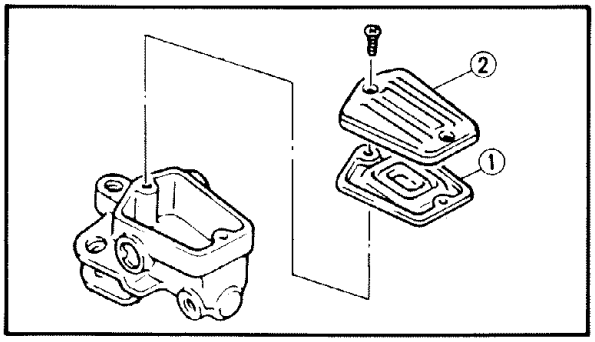
⚠ WARNING

- **Use only the designated quality brake fluid. otherwise, the rubber seals may deteriorate, causing leakage and poor brake performance.**
- **Refill with the same type of brake fluid; mixing fluids may result in a harmful chemical reaction and lead to poor performance.**
- **Be careful that water does not enter the master cylinder when refilling. Water will significantly lower the boiling point of the fluid and may result in vapor lock.**



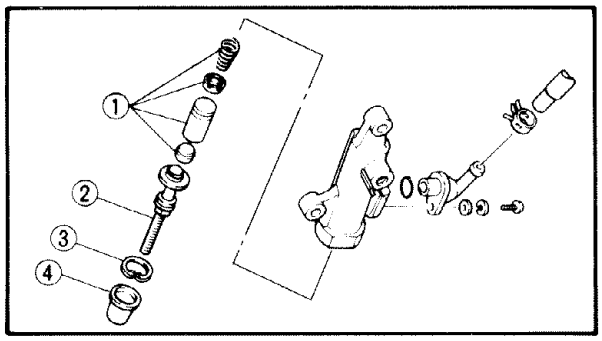
7. Air bleed:
   - Brake system
     Refer to "AIR BLEEDING" section in the CHAPTER 3.
8. Inspect:
   - Brake fluid level
     Refer to the "BRAKE FLUID INSPECTION" section in the CHAPTER 3.

①"LOWER" level line



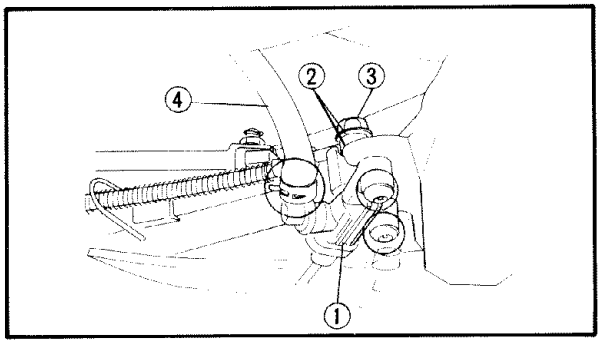
9. Install:
   - Diaphragm ①
   - Cap (master cylinder) ②

Screw (master cylinder cap):
2 Nm (0.2 m · kg, 1.4 ft · lb)



Rear brake

1. Install:
   - Master cylinder kit ①
   - Push rod ②
   - Circlip ③
   - Dust boot ④



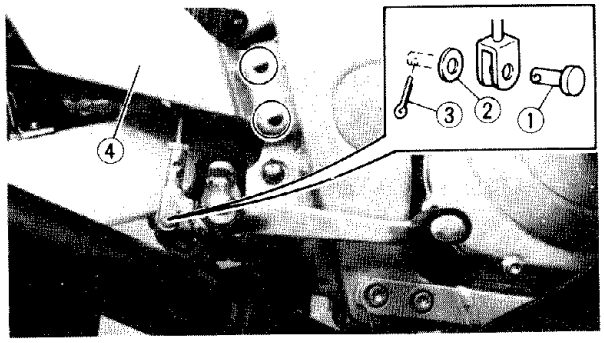
2. Install:
   - Master cylinder ①
   - Copper washers ②
   - Union bolt ③

Bolt (master cylinder):
20 Nm (2.0 m · kg, 14 ft · lb)
Union bolts:
26 Nm (2.6 m · kg, 19 ft · lb)

3. Connect:
   - Brake hose (reservoir tank — master cylinder) ④

⚠ WARNING

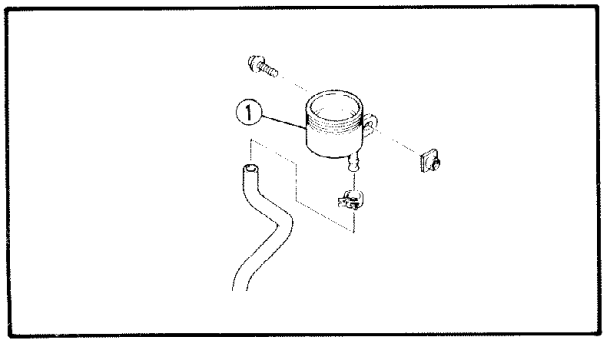
- **Proper hose routing is essential to insure safe machine operation. Refer to "CABLE ROUTING".**
- **Always use new copper washers.**



4. Install:
   - Clevis pin ①
   - Washer ②
   - Cotter pin ③
   - Plate ④

⚠ WARNING

Always use a new cotter pin.



5. Install:
   - Reservoir tank ①
   (to frame)

6. Fill:
   - Reservoir tank

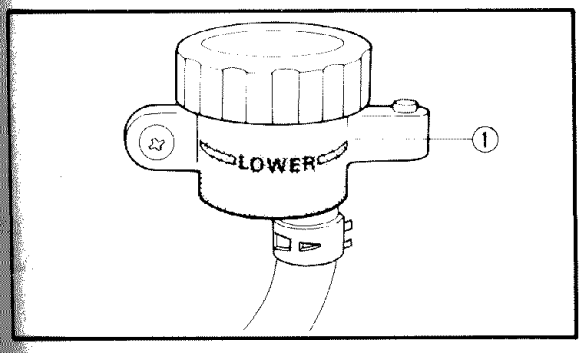
Recommended brake fluid:
DOT #4
If DOT #4 is not available, #3 can be used.

CAUTION:

Brake fluid may erode painted surfaces or plastic parts. Always clean up spilled fluid immediately.

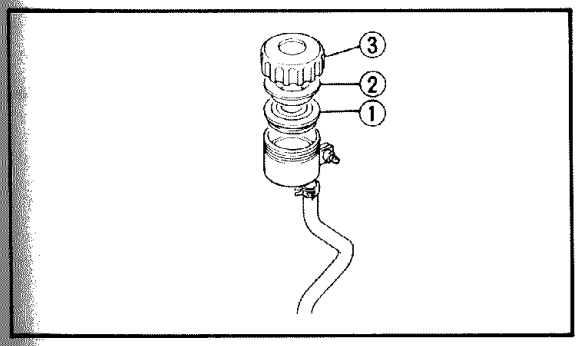
⚠ WARNING

- Use only the designated quality brake fluid: otherwise, the rubber seals may deteriorate, causing leakage and poor brake performance.
- Refill with the same type of brake fluid; mixing fluids may result in a harmful chemical reaction and lead to poor performance.
- Be careful that water does not enter the master cylinder when refilling. Water will significantly lower the boiling point of the fluid and may result in vapor lock.

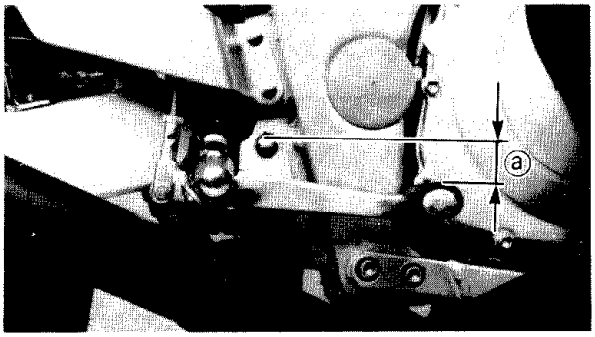


7. Air bleed:
   - Brake system
     Refer to "AIR BLEEDING" section in the CHAPTER 3.
8. Inspect:
   - Brake fluid level
     Refer to the "BRAKE FLUID INSPECTION" section in the CHAPTER 3.

① "LOWER" level line



9. Install:
   - Diaphragm ①
   - Holder (diaphragm) ②
   - Cap (reservoir tank) ③



10. Adjust:
    - Rear brake pedal height ⓐ

Pedal height:
44 mm (1.73 in)
Below top of footrest

Refer to the "REAR BRAKE ADJUSTMENT" section in the CHAPTER 3.

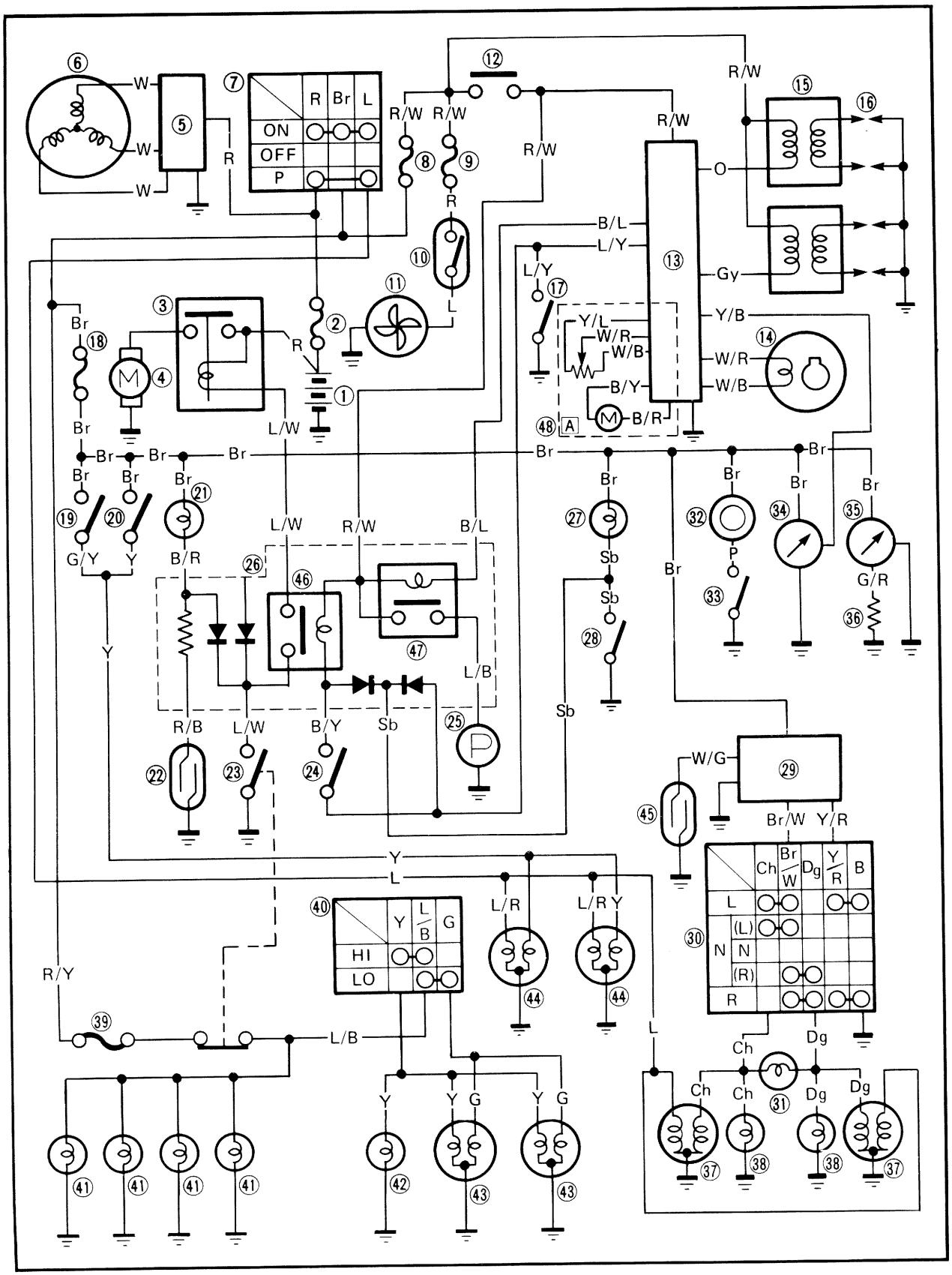
11. Install:
    - Side cover (right)
    - Seat

    Refer to "COVERS" section in the CHAPTER 3.

— MEMO —

ELECTRICAL

CIRCUIT DIAGRAM



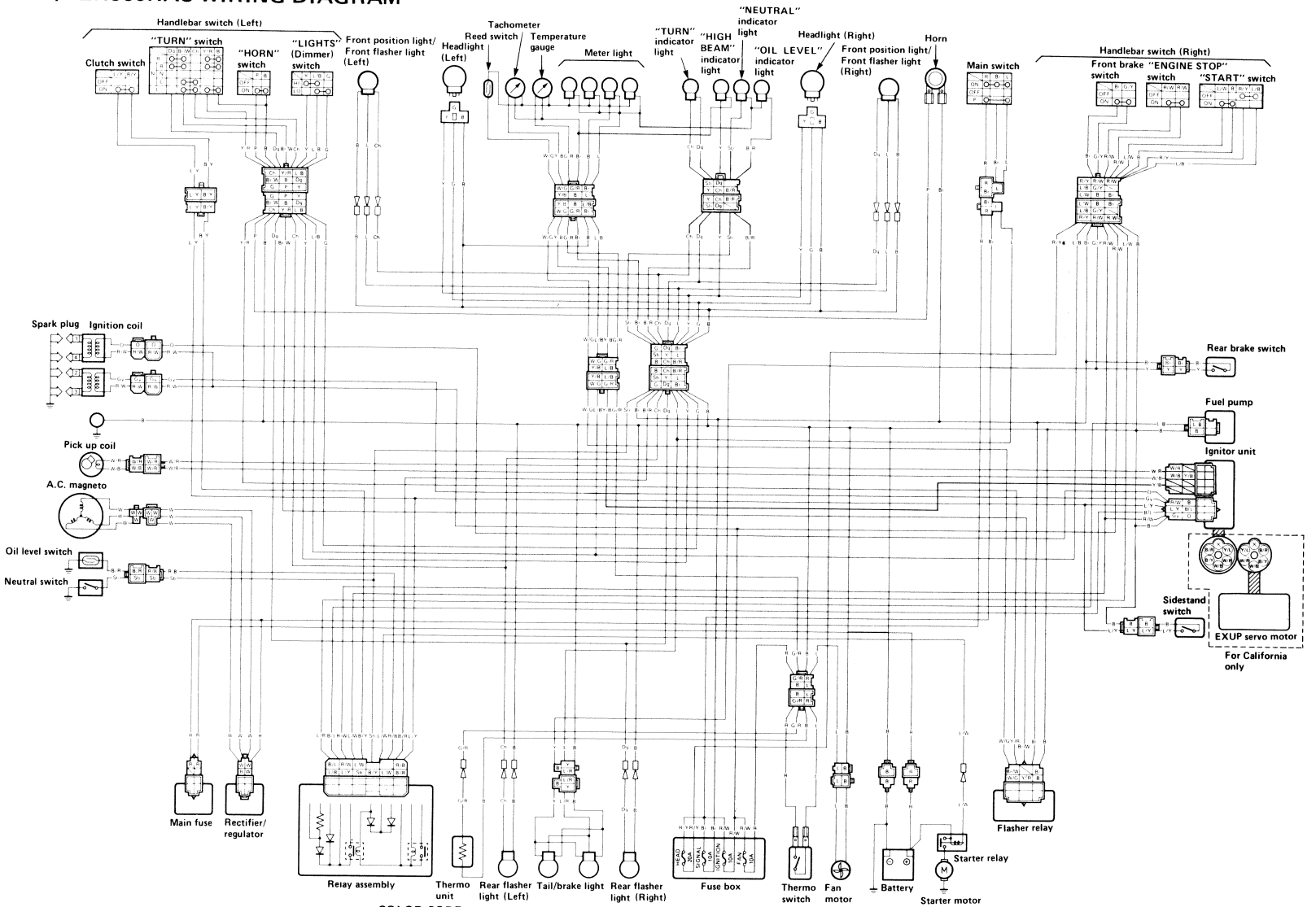
① Battery
② Fuse (main)
③ Starter relay
④ Starter motor
⑤ Rectifier/Regulator
⑥ A.C. generator
⑦ Main switch
⑧ Fuse (ignition)
⑨ Fuse (fan)
⑩ Thermo switch
⑪ Fan motor
⑫ "ENGINE STOP" switch
⑬ Ignitor unit
⑭ Pickup coil
⑮ Ignition coil
⑯ Spark plug
⑰ Side stand switch
⑱ Fuse (signal)
⑲ Front brake switch
⑳ Rear brake switch
㉑ "OIL LEVEL" indicator light
㉒ Oil level switch
㉓ "START" switch
㉔ Clutch switch
㉕ Fuel pump
㉖ Relay assembly
㉗ Neutral indicator light
㉘ Neutral switch
㉙ Flasher relay
㉚ "TURN" switch
㉛ "TURN" indicator light
㉜ Horn
㉝ "HORN" switch
㉞ Tachometer
㉟ Engine temperature gauge
㊱ Thermo unit
㊲ Front position light/Front flasher light
㊳ Rear flasher light
㊴ Fuse (head)
㊵ "LIGHTS" (dimmer) switch
㊶ Meter light
㊷ "HIGH BEAM" indicator light
㊸ Headlight
㊹ Tail/brake light
㊺ Reed switch
㊻ Starting circuit cut-off relay
㊼ Fuel pump relay
㊽ "EXUP" servo motor

[A] For California only

COLOR CODE

B	Black	Sb	Sky blue	L/R	Blue/Red
R	Red	Dg	Dark green	L/Y	Blue/Yellow
L	Blue	W	White	L/W	Blue/White
G	Green	B/R	Black/Red	G/R	Green/Red
O	Orange	B/L	Black/Blue	G/Y	Green/Yellow
Y	Yellow	B/Y	Black/Yellow	Y/R	Yellow/Red
P	Pink	R/Y	Red/Yellow	Br/W	Brown/White
Br	Brown	R/B	Red/Black	W/G	White/Green
Ch	Chocolate	R/W	Red/White	W/R	White/Red
Gy	Gray	L/B	Blue/Black	W/B	White/Black

FZR600RA/FZR600RAC WIRING DIAGRAM



COLOR CODE

B . . . . . .Black	P . . . . . .Pink	Sb . . . . . .Sky blue	B/R . . . . .Black/Red	G/R . . . . .Green/Red	Br/W. . . . .Brown/White
L . . . . . .Blue	O . . . . . .Orange	Dg . . . . . .Dark green	L/B. . . . . .Blue/Black	Y/R . . . . .Yellow/Red	W/B . . . . .White/Black
G . . . . . .Green	Br. . . . . .Brown	W. . . . . .White	L/Y . . . . .Blue/Yellow	R/B . . . . .Red/Black	W/G . . . . .White/Green
Y . . . . . .Yellow	Ch . . . . . .Chocolate	B/L. . . . . .Black/Blue	L/W . . . . .Blue/White	R/Y . . . . .Red/Yellow	W/R . . . . .White/Red
R . . . . . .Red	Gy . . . . . .Gray	B/Y . . . . .Black/Yellow	G/Y . . . . .Green/Yellow	R/W . . . . .Red/White	

YAMAHA

FZR600RB
FZR600RBC

SUPPLEMENTARY SERVICE MANUAL

LIT-11616-07-60

3HH-28197-13

NOTICE

This manual was written by the Yamaha Motor Company primarily for use by Yamaha dealers and their qualified mechanics. It is not possible to put an entire mechanic's education into one manual, so it is assumed that persons using this book to perform maintenance and repairs on Yamaha motorcycles have a basic understanding of the mechanical concepts and procedures inherent in motorcycle repair technology. Without such knowledge, attempted repairs or service to this model may render it unfit to use and/or unsafe.

This model has been designed and manufactured to perform within certain specifications in regard to performance and emissions. Proper service with the correct tools is necessary to ensure that the motorcycle will operate as designed. If there is any question about a service procedure, it is imperative that you contact a Yamaha dealer for any service information changes that apply to this model. This policy is intended to provide the customer with the most satisfaction from his motorcycle and to conform with federal environmental quality objectives.

Yamaha Motor Company, Ltd. is continually striving to improve all models manufactured by Yamaha. Modifications and significant changes in specifications or procedures will be forwarded to all Authorized Yamaha dealers and will, where applicable, appear in future editions of this manual.

NOTE:

This Service Manual contains information regarding periodic maintenance to the emission control system for the FZR600RB/RBC. Please read this material carefully.

TECHNICAL PUBLICATIONS
SERVICE DIVISION
MOTORCYCLE GROUP
YAMAHA MOTOR CO., LTD.

PARTICULARLY IMPORTANT INFORMATION

This material is distinguished by the following notation.

⚠ The Safety Alert Symbol means ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!

⚠WARNING Failure to follow WARNING instructions could result in severe injury or death to the motorcycle operator, a bystander, or a person inspecting or repairing the motorcycle.

CAUTION: A CAUTION indicates special precautions that must be taken to avoid damage to the motorcycle.

NOTE: A NOTE provides key information to make procedures easier or cleaer.

HOW TO USE THIS MANUAL

CONSTRUCTION OF THIS MANUAL

This manual consists of chapters for the main categories of subjects. (See "Illustrated symbols")

1st title ① : This is a chapter with its symbol on the upper right of each page.

2nd title ② : This title appears on the upper of each page on the left of the chapter symbol. (For the chapter "Periodic inspection and adjustment" the 3rd title appears.)

3rd title ③ : This is a final title.

MANUAL FORMAT

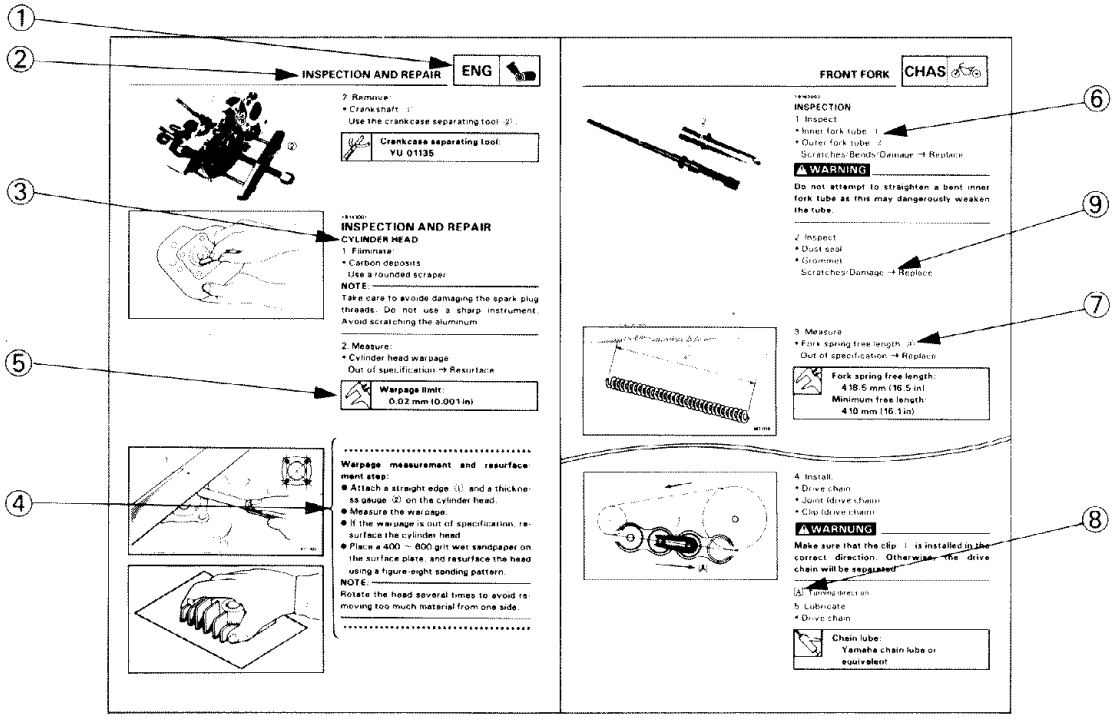
All of the procedures in this manual are organized in a sequential, step-by-step format. The information has been compiled to provide the mechanic with an easy to read, handy reference that contains comprehensive explanations of all disassembly, repair, assembly, and inspections.
A set of particularly important procedure ④ is placed between a line of asterisks "*" with each procedure preceded by " ● ".

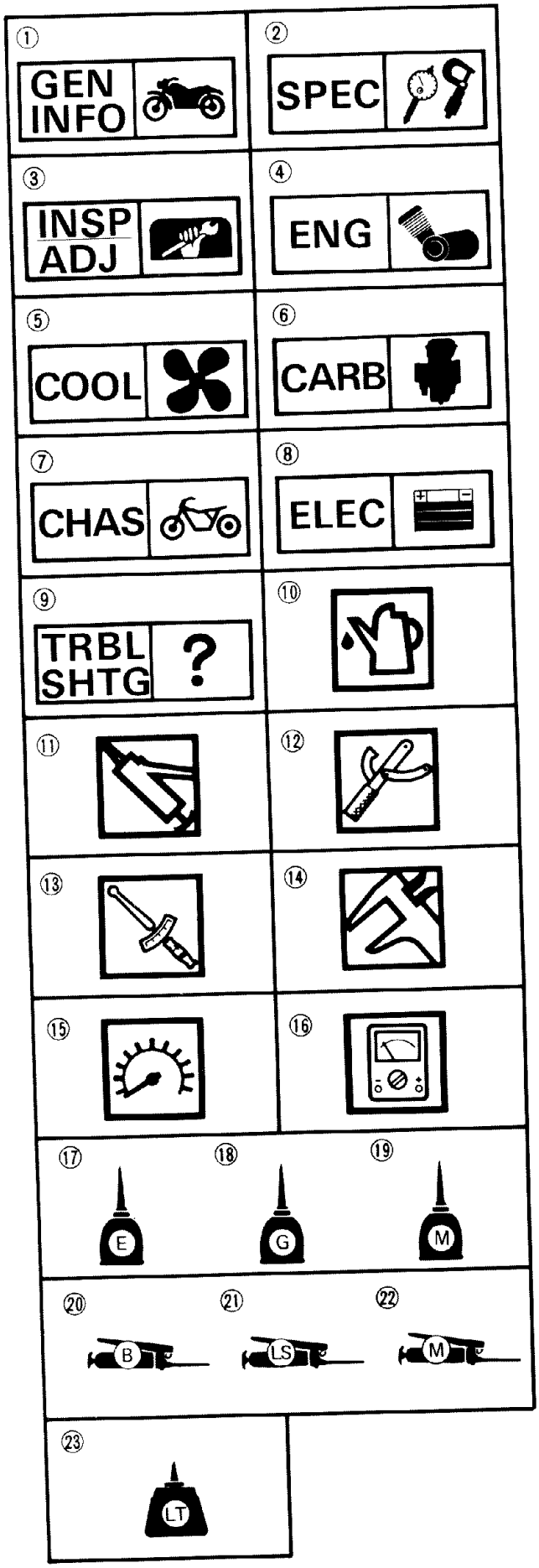
IMPORTANT FEATURES

- Data and a special tool are framed in a box preceded by a relevant symbol ⑤ .
- An encircled numeral ⑥ indicates a part name, and an encircled alphabetical letter data or an alignment mark ⑦ , the others being indicated by an alphabetical letter in a box ⑧ .
- A condition of a faulty component will precede an arrow symbol and the course of action required the symbol ⑨ .

EXPLODED DIAGRAM

Each chapter provides exploded diagrams before each disassembly section for ease in identifying correct disassembly and assembly procedures.





ILLUSTRATED SYMBOLS
(Refer to the illustration)

Illustrated symbols ① to ⑨ are designed as thumb tabs to indicate the chapter's number and content.

① General information
② Specifications
③ Periodic inspection and adjustment
④ Engine
⑤ Cooling system
⑥ Carburetion
⑦ Chassis
⑧ Electrical
⑨ Troubleshooting

Illustrated symbols ⑩ to ⑯ are used to identify the specifications appearing.

⑩ Filling fluid
⑪ Lubricant
⑫ Special tool
⑬ Tightening
⑭ Wear limit, clearance
⑮ Engine speed
⑯ Ω, V, A

Illustrated symbols ⑰ to ㉓ in the exploded diagram indicate grade of lubricant and location of lubrication point.

⑰ Apply engine oil
⑱ Apply gear oil
⑲ Apply molybdenum disulfide oil
⑳ Apply wheel bearing grease
㉑ Apply lightweight lithium-soap base grease
㉒ Apply molybdenum disulfide grease
㉓ Apply locking agent (LOCTITE®)

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VEHICLE IDENTIFICATION NUMBER 1
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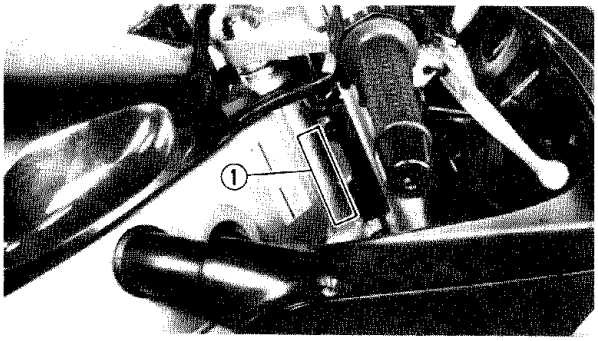
GENERAL INFORMATION



MOTORCYCLE IDENTIFICATION

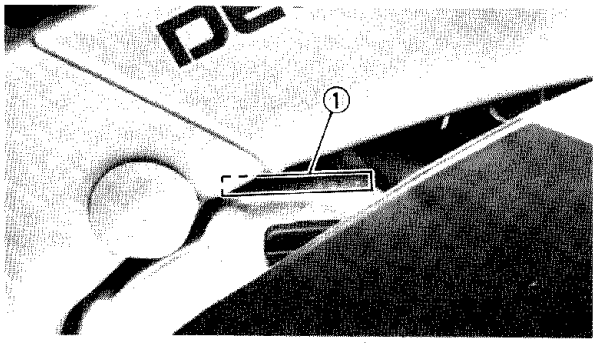
VEHICLE IDENTIFICATION NUMBER

The vehicle identification number ① is stamped into the right side of the steering head.

Starting serial number:
FZR600RB (Except for California):
JYA3HHE0 * MA032101
FZR600RBC (For California):
JYA3UUC0 * MA003101

NOTE:

The vehicle identification number is used to identify your motorcycle and may be used to register your motorcycle with the licensing authority in your state.



ENGINE SERIAL NUMBER

The engine serial number ① is stamped into the right side of the engine.

Starting serial number:
FZR600RB (Except for California):
3HH-032101
FZR600RBC (For California):
3UU-003101

NOTE:

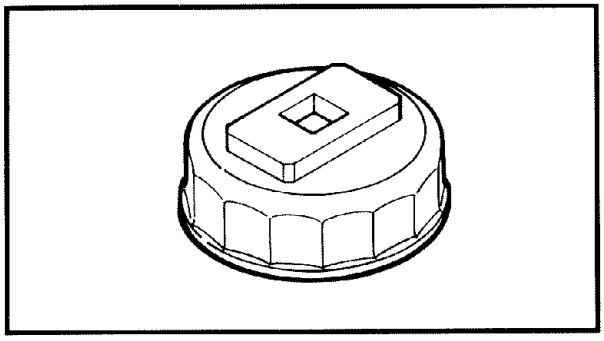
- The first three digits of these numbers are for model identifications; the remaining digits are the unit production number.
- Designs and specifications are subject to change without notice.

SPECIAL TOOLS

The proper special tools are necessary for complete and accurate tune-up and assembly. Using the correct special tool will help prevent damage caused by the use of improper tools orimprovised techniques. The shape and part number used for the special tool differ by country, so two types are prouided. Refer to the list prouided to avoid errors when placing an order.

P/N. YM-□□□□□ , YU-□□□□□
YS- □□□□□ , YK-□□□□□
ACC-□□□□□ — For US, CDN

P/N. 90890-□□□□□ — Except for US, CDN



FOR ENGINE SERVICE

7. Oil filter wrench
   P/N J-37140A
   P/N 90890-01426
   This tool is used to loosen or tighten the oil filter.

SPECIFICATIONS

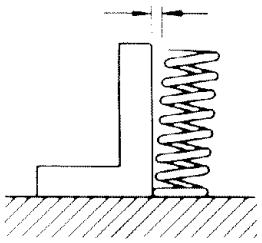
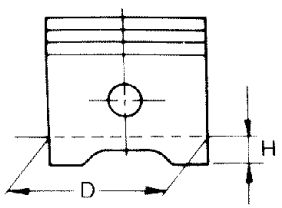
GENERAL SPECIFICATIONS

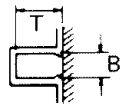
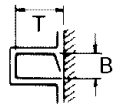
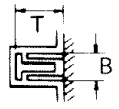
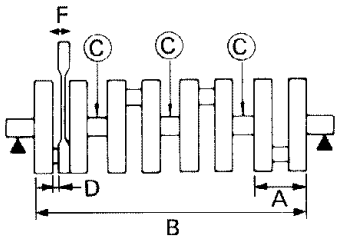
Model	FZR600RB/RBC	
	FZR600RB	FZR600RBC
Model Code Number	3HH6	3UU2
Vehicle Identification Number	JYA3HHE0 * MA032101	JYA3UUC0 * MA003101
Engine Starting Number	3HH-032101	3UU-003101
Dimensions: Overall Length Overall Width Overall Height Seat Height Wheelbase Minimum Ground Clearance	 2,095 mm (82.5 in) 700 mm (27.6 in) 1,155 mm (45.5 in) 785 mm (30.9 in) 1,425 mm (56.1 in) 135 mm (5.3 in)	
Basic Weicht: With Oil and Full Fuel Tank	201 kg (443 lb), 206 kg (454 lb) (FZR600RBC)	
Transmission: Primary Reduction System Primary Reduction Ratio Secondary Reduction System Secondary Reduction Ratio Transmission Type Operation Gear Ratio 1st 2nd 3rd 4th 5th 6th	 Spur gear 82/48 (1.708) Chain drive 45/15 (3.000) Constant-mesh, 6-speed Left foot operation 37/13 (2.846) 37/19 (1.947) 31/20 (1.550) 28/21 (1.333) 31/26 (1.192) 30/27 (1.111)	
Tire:	Front	Rear
Type Size Manufacture (Type)	Tubeless 110/70 VR17-V240 110/70 ZR17 (FZR600RBC) Michelin (A59) Pirelli (MP7) Dunlop (SPORT MAX) Bridgestone (CYROX-17)	Tubeless 140/60 VR18-V240 140/60 ZR18 (FZR600RBC) Michelin (M59) Pirelli (MP7) Dunlop (SPORT MAX) Bridgestone (CYROX-16)
Maximum Load*	157 kg (346 lb) 152 kg (335 lb) (FZR600RBC)	
Tire Pressure (Cold tire):	Front	Rear
Up to 90 kg (198 lb) load*	225 kPa (2.25 kg/cm², 33 psi)	250 kPa (2.5 kg/cm², 36 psi)
90 kg (198 lb) ~ Maximum load*	250 kPa (2.5 kg/cm², 36 psi)	290 kPa (2.9 kg/cm², 42 psi)
High speed riding	250 kPa (2.5 kg/cm², 36 psi)	290 kPa (2.9 kg/cm², 42 psi)
*Load is total weight of cargo, rider, passenger, and accessories.		

Model	FZR600RB/RBC
Shock Absorber:	
Front Shock Absorber	Coil-air spring, oil damper
Rear Shock Absorber	Coil-gas spring, oil damper
Electrical:	
Ignition System	T.C.I. (Digital ignition)
Generator System	A.C. magneto generator
Battery Type or Model	GM12AZ
Battery Capacity	12V12AH
Headlight Type:	Quartz bulb (Halogen)
Bulb Wattage x Quantity:	
Headlight	12V 60W/55W
Tail/Brake Light	12V 8W/27W x 2
Flasher Light	12V 27W x 4
Front Position Light	12V 8W x 2
Meter Light	12V 1.7W x 8.4

MAINTENANCE SPECIFICATIONS

ENGINE

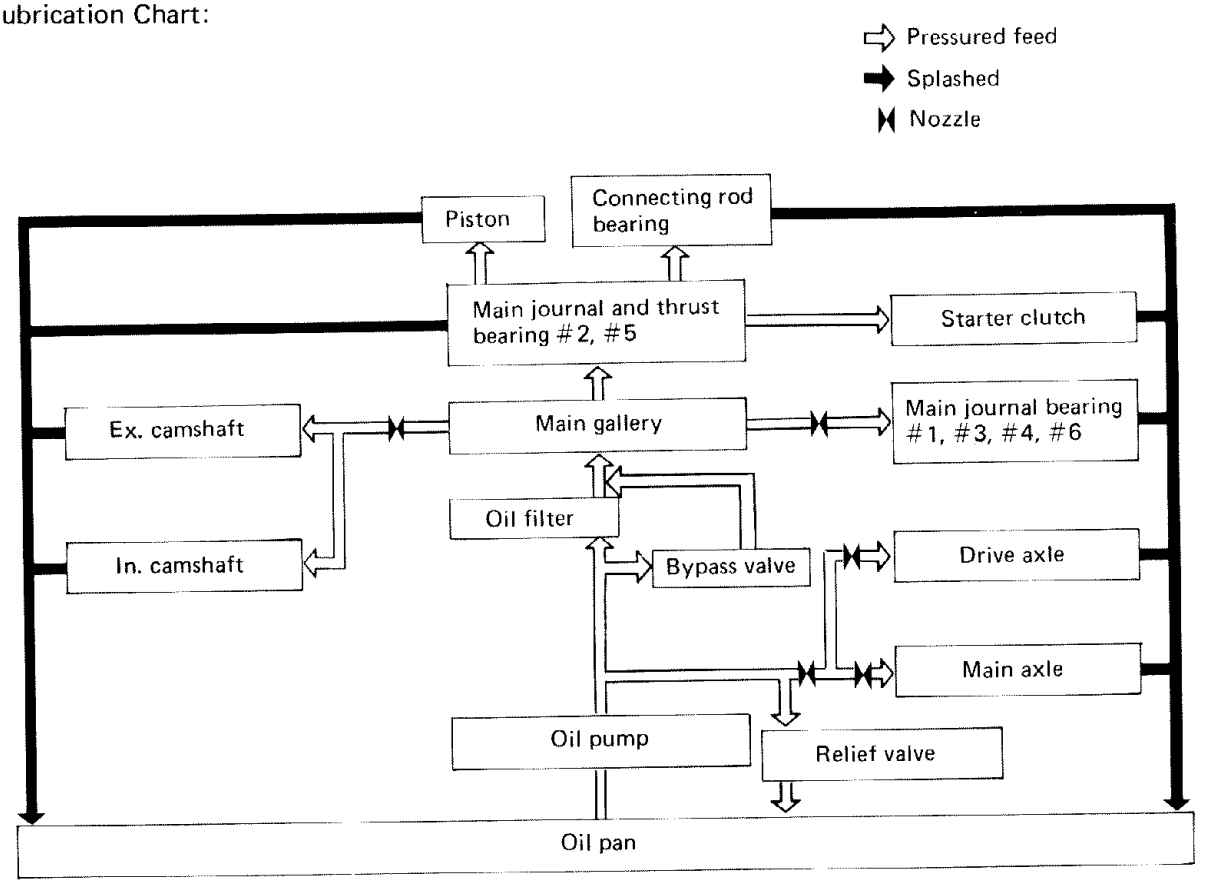
Model		FZR600RB/RBC
Valve Spring:		
Free Length	IN.	43.15 mm (1.70 in)
	EX.	43.15 mm (1.70 in)
< Limit >	IN.	41.2 mm (1.62 in)
	EX.	41.2 mm (1.62 in)
Installed Length (Valve Closed)	IN.	37.5 mm (1.48 in)
	EX.	37.5 mm (1.48 in)
Compressed Pressure	IN.	11.6 ~ 13.4 kg (25.9 ~ 29.6 lb)
(Valve closed)	EX.	11.6 ~ 13.4 kg (25.9 ~ 29.6 lb)
< Limit >	IN.	10.4 kg (22.1 lb)
	EX.	10.4 kg (22.1 lb)
Tilt Limit	IN.	2.5°/1.9 mm (0.0748 in)
	EX.	2.5°/1.9 mm (0.0748 in)
		
Direction of Winding (Top view)	IN.	
	EX.	
Piston:		
Piston Size "D"		58.940 ~ 58.955 mm (2.321 ~ 2.322 in)
Measuring Point "H"		5 mm (0.197 in)
		(From bottom line of piston skirt)

Model			FZR600RB/RBC
Piston-to-Cylinder Clearance < Limit > Oversize:			0.045 ~ 0.070 mm (0.0018 ~ 0.0028 in) < 0.15 mm (0.006 in) > 59.5 mm (2.343 in)
Piston Ring: Sectional Sketch	1st	Top Ring	Barrel B = 0.8 mm (0.0315 in) T = 2.1 mm (0.0827 in)
		2nd Ring	Taper B = 0.8 mm (0.0315 in) T = 2.1 mm (0.0827 in)
		Oil Ring	Expander B = 1.5 mm (0.0591 in) T = 2.2 mm (0.0866 in)
			
End Gap (Installed):		Top Ring	0.15 ~ 0.30 mm (0.0059 ~ 0.0118 in)
		< Limit >	0.6 mm (0.0236 in)
		2nd Ring	0.15 ~ 0.30 mm (0.0059 ~ 0.0118 in)
		< Limit >	0.6 mm (0.0236 in)
		Oil Ring	0.2 ~ 0.6 mm (0.0079 ~ 0.0236 in)
Side Clearance:		Top Ring	0.03 ~ 0.07 mm (0.0012 ~ 0.0028 in)
		< Limit >	0.10 mm (0.004 in)
		2nd Ring	0.02 ~ 0.06 mm (0.0008 ~ 0.0024 in)
		< Limit >	0.10 mm (0.004 in)
		Oil Ring	—
Connecting Rod: Connecting Rod Oil Clearance		< Limit >	0.043 ~ 0.066 mm (0.0017 ~ 0.0026 in) 0.08 mm (0.0031 in)
Bearing Size No. Color Code			1. Blue 2. Black 3. Brown 4. Green
Crankshaft: 			
Crank Width "A"			48.4 mm (1.9055 in)
Assembly Width "B"			296.8 ~ 298.0 mm (11.685 ~ 11.732 in)
Runout Limit "C"			0.03 mm (0.0012 in)
Big End Side Clearance "D"			0.160 ~ 0.262 mm (0.0063 ~ 0.0103 in)
Small End Free Play "F"			0.32 ~ 0.50 mm (0.0126 ~ 0.0197 in)
Main Journal Oil Clearance: Bearing Size No. Color Code:			0.025 ~ 0.043 mm (0.0010 ~ 0.0017 in) 1. Blue 2. Black 3. Brown 4. Green 5. Yellow
Thrust Bearing Position:			#5 JOURNAL

Model		FZR600RB/RBC	
Carburetor:		FZR600RB	FZR600RBC
Type/Manufacture x Quantity		BDST32/MIKUNI x4	←
I.D. Mark		3HH-03	3UU-03
Main Jet	(M.J.)	#107.5	←
Main Air Jet	(M.A.J.)	#65	←
Jet Needle-Clip Position	(J.N.)	5CFZ7-1	←
Needle Jet	(N.J.)	Y-0	←
Pilot Jet	(P.J.)	#32.5	←
Pilot Outlet Size	(P.O.)	0.8	←
Pilot Air Jet	(P.A.J.)	#132.5	←
Pilot Screw	(P.S.)	3.0	←
Valve Seat Size	(V.S.)	1.2	←
Starter Jet	($G.S._1$)	#52.5	#50
	($G.S._2$)	0.6	←
Bypass 1	(B.P. 1)	0.8	←
Bypass 2	(B.P. 2)	0.8	←
Throttle Valve Size	(Th. V)	#130	←
Fuel Level	(F.L.)	3.8 ~ 4.8 mm (0.15 ~ 0.19 in) Above the float chamber line	
Engine Idle Speed		1.150 ~ 1.250 r/min	
Fuel Pump:			
Type		Electrical Type	
Model/Manufacturer		3EN/MITSUBISHI	
Consumption Amperage < Max. >		0.8A	
Output Pressure		7 kPa (0.07 kg/cm², 0.995 psi)	
Lubrication System:			
Oil Filter Type		Paper	
Oil Pump Type		Trochoid pump	
Tip Clearance		0.03 ~ 0.09 mm (0.0012 ~ 0.0035 in)	
< Limit >		< 0.15 mm (0.006 in) >	
Side Clearance		0.03 ~ 0.08 mm (0.0012 ~ 0.0031 in)	
< Limit >		< 0.15 mm (0.006 in) >	
Oil Pressure (Hot)		80 kPa (0.8 kg/cm², 11.4 psi)/1.200 r/min	
Pressure Check Location		Main Gallery	
Bypass Valve Setting Pressure		80 ~ 120 kPa (0.8 ~ 1.2 kg/cm², 11.38 ~ 17.06 psi)	
Relief Valve Operating Pressure		450 ~ 550 kPa (4.5 ~ 5.5 kg/cm², 63.99 ~ 78.21 psi)	

Model	FZR600RB/RBC

Lubrication Chart:



Tightening torque

Part to be tightened	Part name	Thread size	Q'ty	Tightening torque			Remarks
				Nm	m · kg	ft · lb	
Camshaft Cap	Bolt	M6	24	10	1.0	7.2	E
Stud Bolt (Cylinder head)	—	M6	8	10	1.0	7.2	E
Cylinder Head	Nut	M8	12	25	2.5	18	
Spark Plug	—	M10	4	13	1.3	9.4	
Cylinder Head Cover	Bolt	M6	8	10	1.0	7.2	
Blind Plug (Sand)	Screw	M12	6	37	3.7	27	LT
Blind Plug (Water)	Screw	M6	2	7	0.7	5.1	
Connecting Rod	Nut	M7	8	23	2.3	17	M
Timing Chain Sprocket	Bolt	M7	4	24	2.4	17	
Timing Chain Tensioner	Bolt	M6	2	10	1.0	7.2	
Timing Chain Guide (Intake)	Bolt	M6	2	10	1.0	7.2	LT
Timing Chain Tensioner End	Bolt	M6	1	10	1.0	7.2	
Pipe Stopper	Bolt	M6	4	10	1.0	7.2	
Thermostat Housing Assembly	Bolt	M6	2	7	0.7	5.1	
Thermostat Housing Cover	Bolt	M6	2	10	1.0	7.2	
Radiator	Bolt	M6	2	7	0.7	5.1	
Water Pipe Joint	Bolt	M6	4	10	1.0	7.2	
Water Pump	Bolt	M6	2	10	1.0	7.2	
Water Pump Cover	Bolt	M6	2	10	1.0	7.2	
Radiator Cover	Screw	M5	4	7	0.7	5.1	
Oil Pump Housing	Screw	M6	1	7	0.7	5.1	
Oil Pump Mount	Bolt	M6	3	10	1.0	7.2	LT
Drain Plug	Bolt	M14	1	43	4.3	31	
Oil Delivery Pipe	Bolt	M10	2	20	2.0	14	
Carburetor Joint	Bolt	M6	8	10	1.0	7.2	
Exhaust Pipe	Nut	M6	8	10	1.0	7.2	
Muffler Bracket	Bolt	M8	1	20	2.0	14	
Exhaust Pipe Blind Plug (CO test)	Bolt	M6	4	10	1.0	7.2	
Exhaust Pipe Joint	Bolt	M8	2	20	2.0	14	
Crankcase	Bolt	M8	12	24	2.4	17	E
Stud Bolt (Crankcase)	—	M8	12	13	1.3	9.4	E
Crankcase	Bolt	M6	21	12	1.2	8.7	E
	Bolt	M8	1	24	2.4	17	E
Oil Baffle Plate	Screw	M6	4	7	0.7	5.1	
Crankcase Cover (Left)	Bolt	M6	5	10	1.0	7.2	
Crankcase Cover (Right)	Bolt	M6	10	10	1.0	7.2	
Bearing Plate	Bolt	M6	2	10	1.0	7.2	LT
Generator Cover	Bolt	M6	5	10	1.0	7.2	
Starter Clutch Cover	Bolt	M6	7	10	1.0	7.2	
Starter Clutch	Bolt	M10	1	80	8.0	58	
Starter Clutch Outer and Starter Wheel	Bolt	M8	3	30	3.0	22	LT
Pressure Plate	Bolt	M5	5	6	0.6	4.3	
Clutch Boss	Nut	M18	1	70	7.0	51	Use lock washer
Push Lever	Screw	M5	2	5	0.5	3.6	LT
Push Rod	Nut	M8	1	16	1.6	11	
Drive Sprocket	Nut	M18	1	70	7.0	51	Use lock washer
Stopper Plate	Bolt	M6	1	10	1.0	7.2	LT
Stopper Lever	Bolt	M6	1	10	1.0	7.2	LT

CHASSIS

Model		FZR600RB/RBC						
Rear Suspension:								
Shock Absorber Travel		43 mm (1.69 in)						
Spring Free Length		180.5 mm (7.11 in)						
< Limit >		170.5 mm (6.71 in)						
Fitting Length		170 mm (6.69 in)						
Spring Rate	K1	130 N/mm (13 kg/mm, 728 lb/in)						
Stroke	K1	0 ~ 43 mm (0.0 ~ 1.69 in)						
Optional Spring		No						
Enclosed Gas Pressure:								
Standard		1.200 kPa (12 kg/cm², 171 psi)						
			Hard				STD	Soft	
		Adjusting position	7	6	5	4	3	2	1
Rear Wheel:								
Type		Cast wheel						
Rim Size		MT4.00 x 18						
Rim Material		Aluminum						
Rim Runout Limit	Radial	2.0 mm (0.08 in)						
	Lateral	2.0 mm (0.08 in)						

Parts to be tightened	Thread size	Tightening torque		
		Nm	m · kg	ft · lb
Front Axle and Outer Tube	M14 x 1.5	58	5.8	42
Front Wheel Axle Holder	M8 x 1.25	20	2.0	14
Rear Axle and Nut	M16 x 1.5	107	10.7	77
Handlebar Crown and Inner Tube	M8 x 1.25	26	2.6	19
Handlebar Crown and Steering Stem	M22 x 1.0	110	11.0	80
Steering ring nut (Upper and lower)	–	See "NOTE"		
Brake Caliper (Front/Rear)	M10 x 1.25	35	3.5	25
Bleed Screw and Brake Caliper	M8 x 1.25	6	0.6	4.3
Brake Hose and Union Bolt	M10 x 1.25	26	2.6	19
Front Master Cylinder and Master Cylinder Holder	M6 x 1.0	9	0.9	6.5
Front Master Cylinder and Cylinder Cap	M5 x 0.8	2	0.2	1.4
Front Fender and Outer Tube	M6 x 1.0	6	0.6	4.3
Handlebar Boss and Front Fork	M6 x 1.0	13	1.3	9.4
Handlebar and Handlebar Boss	M8 x 1.25	23	2.3	17
Engine Mounting: Front	M10 x 1.25	55	5.5	40
Rear – Upper	M10 x 1.25	60	6.0	43
Rear – Lower	M10 x 1.25	55	5.5	40
Down Tube and Frame: Front	M10 x 1.25	60	6.0	43
Rear	M8 x 1.25	33	3.3	24
Footrest Bracket and Frame	M8 x 1.25	22	2.2	16
Pivot Axle and Nut	M14 x 1.5	90	9.0	65
Relay Arm and Frame	M10 x 1.25	40	4.0	29
Connecting Rod and Swingarm	M10 x 1.25	40	4.0	29
Connecting Rod and Relay Arm	M10 x 1.25	40	4.0	29
Rear Shock Absorber and Relay Arm	M10 x 1.25	40	4.0	29
Rear Shock Absorber and Frame	M10 x 1.25	40	4.0	29
Footrest and Footrest Bracket	M10 x 1.25	55	5.5	40
Rear Footrest Bracket and Frame	M8 x 1.25	32	3.2	23
Rear Master Cylinder and Rear Arm Bracket	M8 x 1.25	20	2.0	14
Cowling and Stay	M6 x 1.0	4	0.4	2.9
Compression Bar and Brake Caliper Bracket	M8 x 1.25	23	2.3	17
Front Fork Pinch Bolt: Upper	M8 x 1.25	26	2.6	19
Lower	M12 x 1.25	38	3.8	27
Sprocket and Clutch Hub	M8 x 1.25	60	6.0	43
Brake Disc and Clutch Hub	M8 x 1.25	20	2.0	14
Inner Tube and Steering Stem	M8 x 1.25	22	2.2	16
Frame and Rear Frame: Upper	M10 x 1.25	64	6.4	46
Lower	M12 x 1.25	88	8.8	64

NOTE:

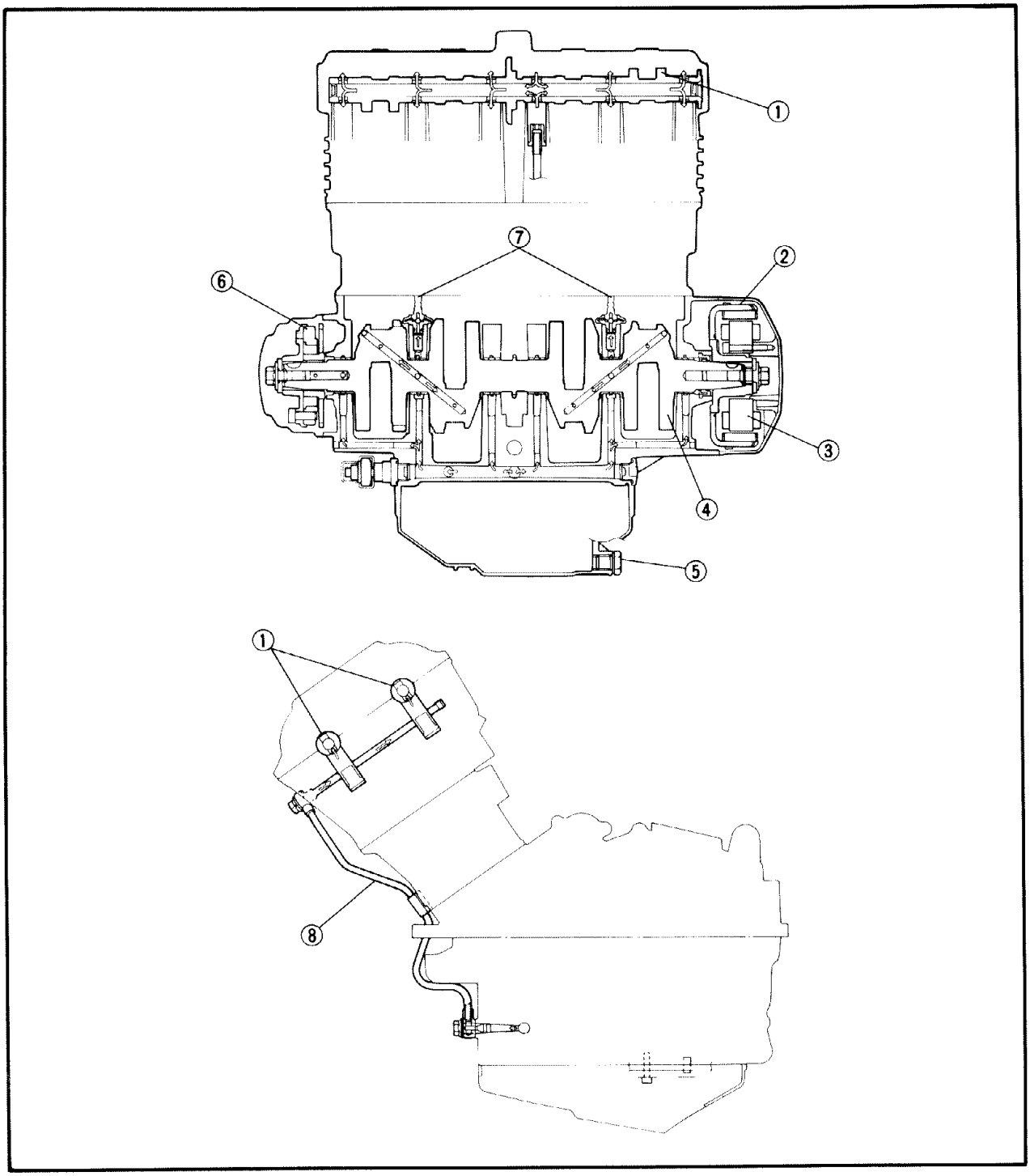
1. First, tighten the ring nut (lower) approximately 52 Nm (5.2 m · kg, 37 ft · lb) by using the torque wrench, then loosen the ring nut one turn.
2. Retighten the ring nut (lower) approximately 3 Nm (0.3 m · kg, 2.2 ft · lb).
3. Install the ring nut (upper). And finger tighten the ring nut (upper), then align the slots of both ring nuts. If not aligned, hold the lower ring nut and tighten the other until they are aligned.

ELECTRICAL

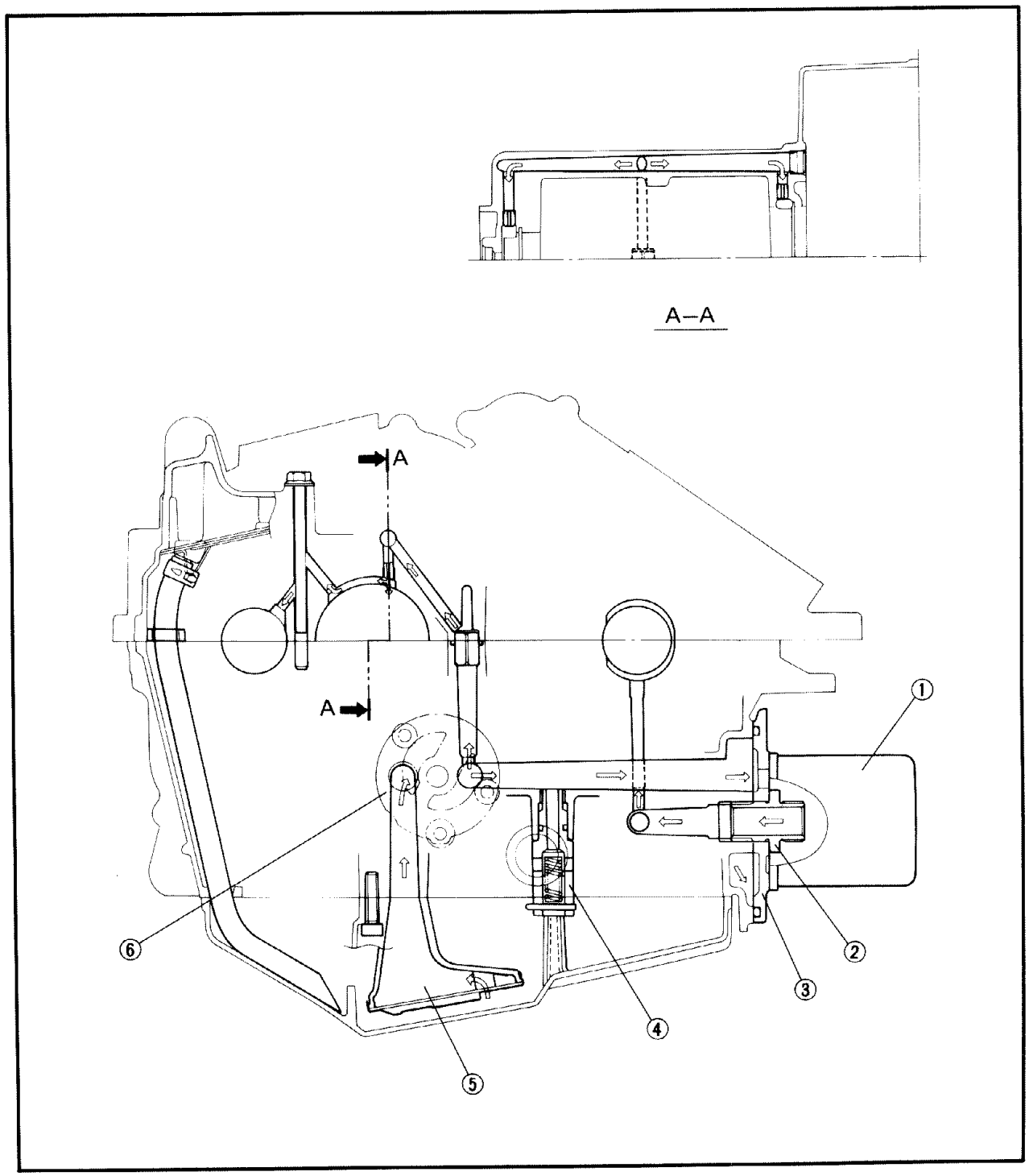
Model	FZR600RB/RBC
Voltage:	12V
Ignition System:	
Ignition Timing (B.T.D.C.)	5° at 1,200 r/min, 5° at 1,300 r/min (FZR600RBC)
Advancer Type	Electrical
T.C.I.:	
Pickup Coil Resistance	80 ~ 120Ω at 20°C (68°F)
(Color)	(White/Red – White/Black)
T.C.I. Unit/Manufacturer	BB7233/HITACHI TID14-73/HITACHI (FZR600RBC)
Rectifier:	
Model/Manufacturer	SH569/SHINDENGEN
Capacity	25A
Withstand Voltage	240V
Electrical Starter System:	
Type	Constant mesh type
Starter Motor:	
Model/Manufacturer	SM-13/MITSUBA
Output	0.7 kW
Brush – Overall Length	12.5 mm (0.49 in)
< Limit >	4 mm (0.16 in)
Commutator Dia.	28 mm (1.10 in)
Wear Limit	27 mm (1.06 in)
Mica Undercut	0.7 mm (0.027 in)
Starter Switch:	
Model/Manufacturer	A104-128/HITACHI
Amperage Rating	100A
Coil Winding Resistance	3.87 ~ 4.73Ω at 20°C (68°F)
Horn:	
Type/	Plane Type/1 pcs.
Model/Manufacturer	YF-12/NIKKO
Maximum Amperage	2.5A, 1.5A (FZR600RBC)
Flasher Relay (Relay Assembly):	
Type	Semi transistor type
Model/Manufacturer	FB257N/NIPPONDENSO
Self Cancelling Device	Yes
Flasher Frequency	60 ~ 120 cycle/min
Wattage	27W x 2 pcs + 3.4W
Thermostat Switch:	
Model/Manufacturer	2EL/NIPPON THERMOSTAT
Circuit Breaker:	
Type	Fuse
Amperage for Individual Circuit x Quantity:	
MAIN	30A x 1
HEADLIGHT	20A x 1
SIGNAL	10A x 1
IGNITION	10A x 1
RESERVE	10A x 1, 30A x 1, 20A x 1

LUBRICATION DIAGRAM

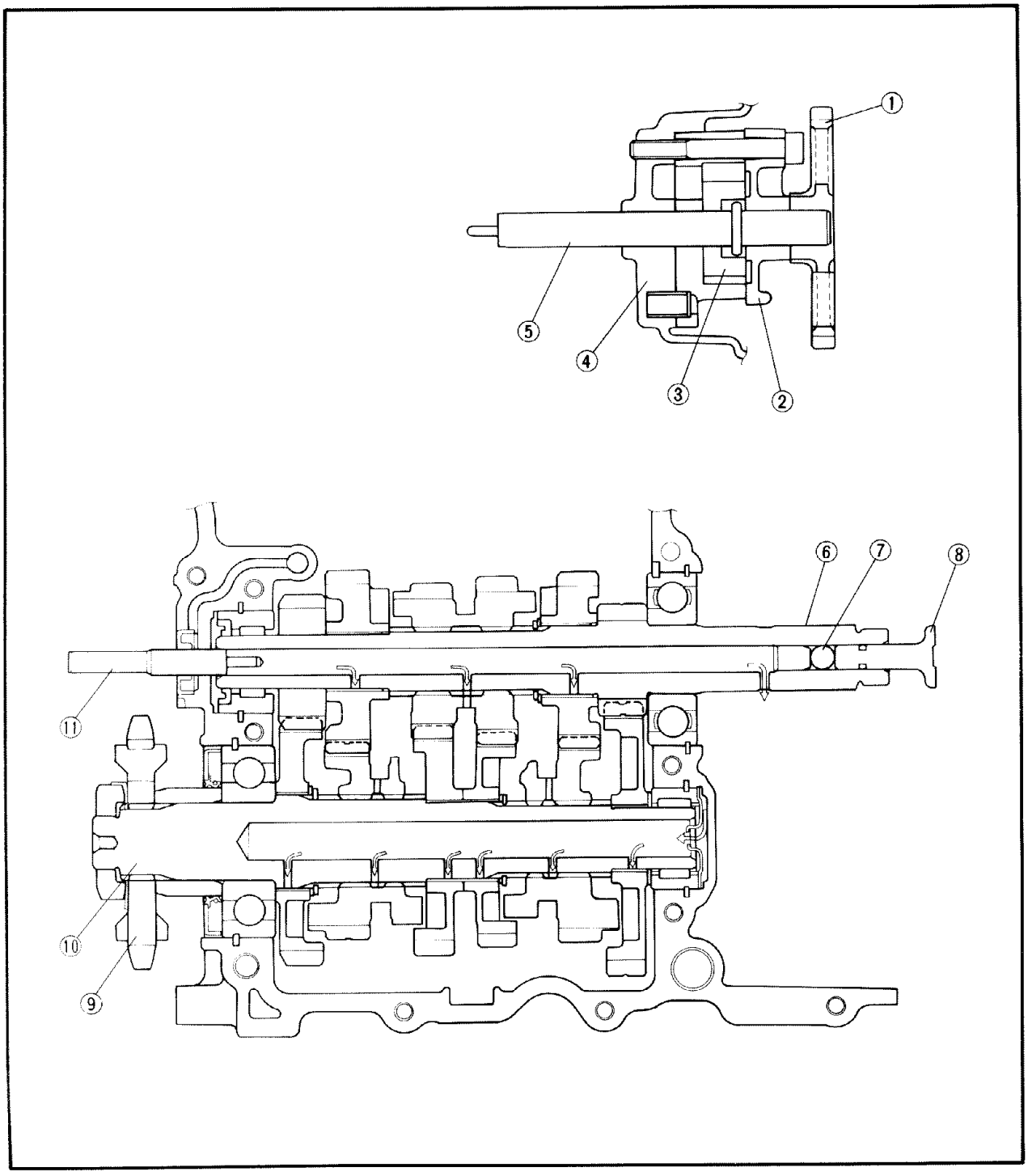
① Camshaft
② Rotor
③ Stator coil
④ Crankshaft
⑤ Drain plug
⑥ Starter clutch
⑦ Oil jet nozzle
⑧ Oil delivery pipe



① Oil filter
② Bolt
③ Adapter plate
④ Relief valve
⑤ Oil strainer
⑥ Oil pump

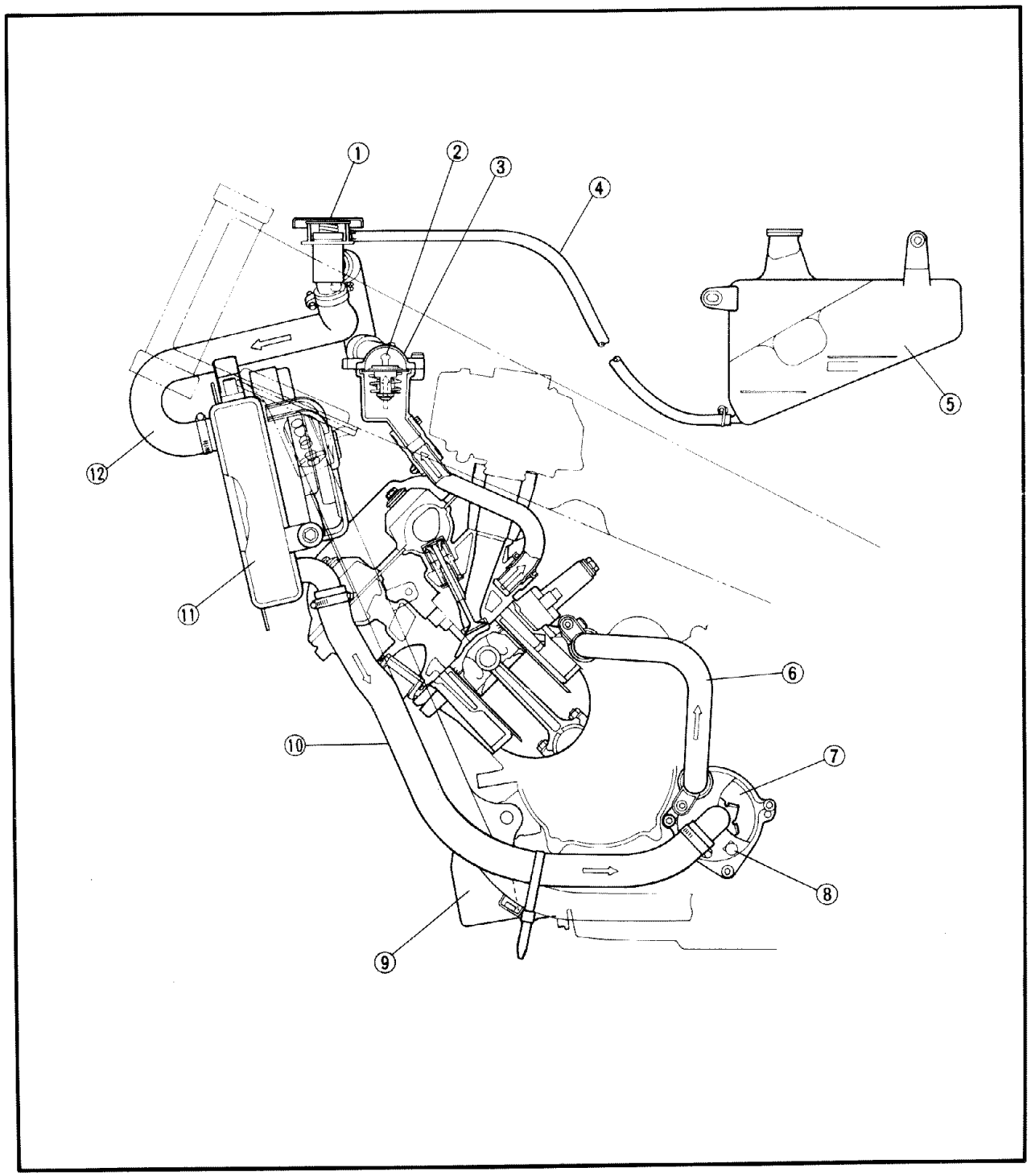


① Oil pump driven gear
② Oil pump cover
③ Inner rotor
④ Oil pump housing
⑤ Pump shaft
⑥ Main axle
⑦ Ball
⑧ Push rod #1
⑨ Drive sprocket
⑩ Drive axle
⑪ Push rod #2

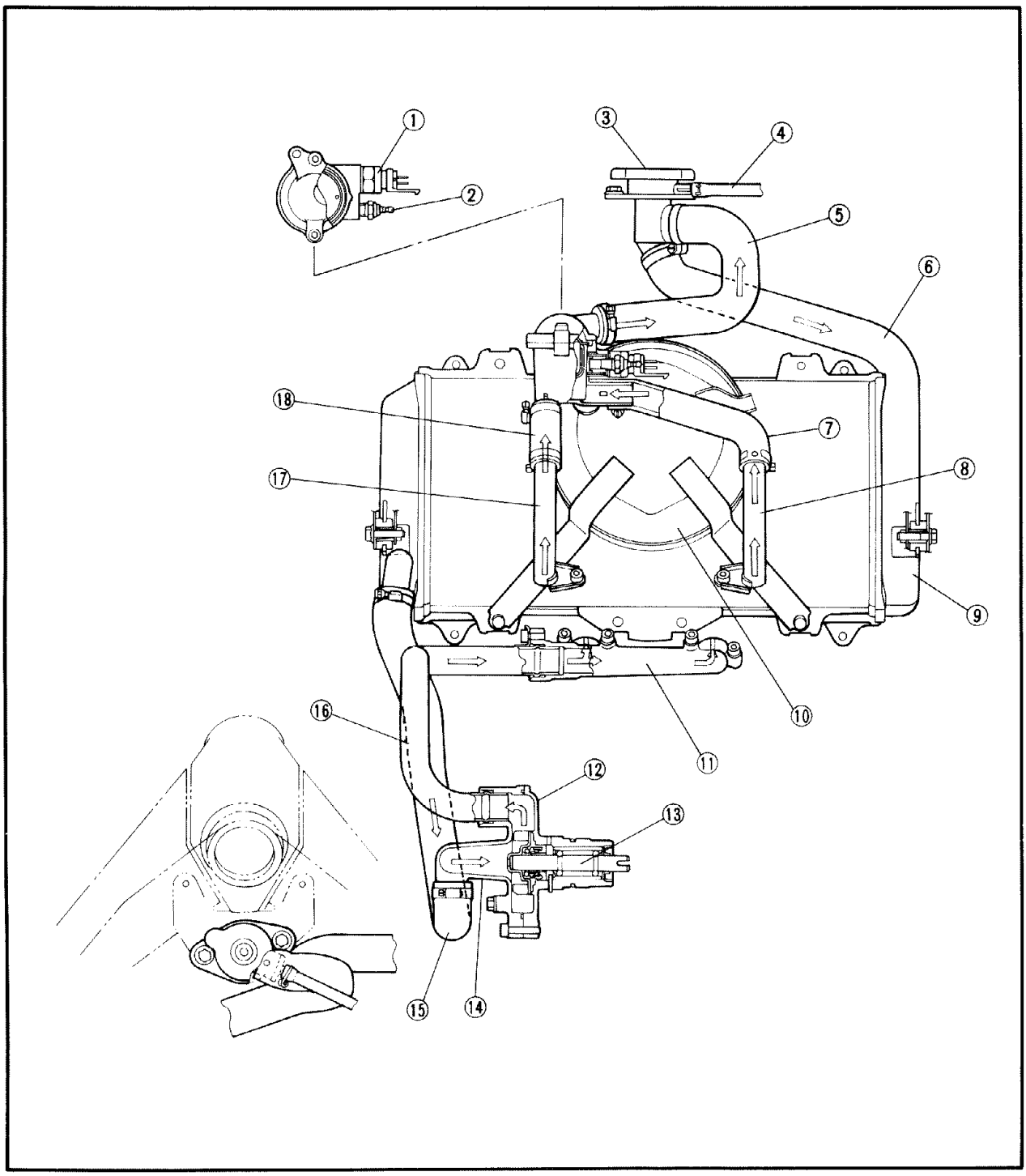


COOLANT DIAGRAM

① Radiator cap
② Thermostatic valve
③ Thermostatic valve housing
④ Reservoir tank hose
⑤ Coolant reservoir tank
⑥ Water pipe
⑦ Water pump
⑧ Drain bolt
⑨ Oil filter
⑩ Radiator hose (outlet)
⑪ Radiator
⑫ Radiator hose (inlet)



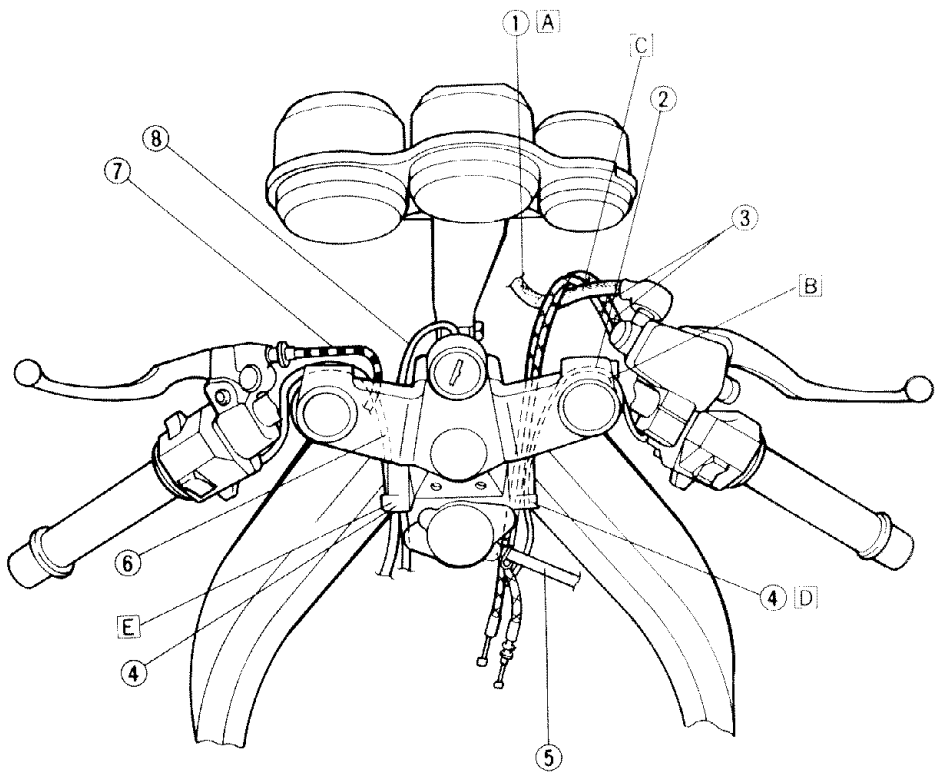
① Thermo switch
② Thermo unit
③ Radiator cap
④ Reservoir tank hose
⑤ Radiator hose 3
⑥ Radiator hose (inlet)
⑦ Radiator hose 2
⑧ Radiator pipe 1
⑨ Radiator
⑩ Fan motor assembly
⑪ Water jacket joint
⑫ Water pump housing
⑬ Water pump
⑭ Water pump cover
⑮ Radiator hose (outlet)
⑯ Water pipe
⑰ Radiator pipe 2
⑱ Radiator hose 1



CABLE ROUTING

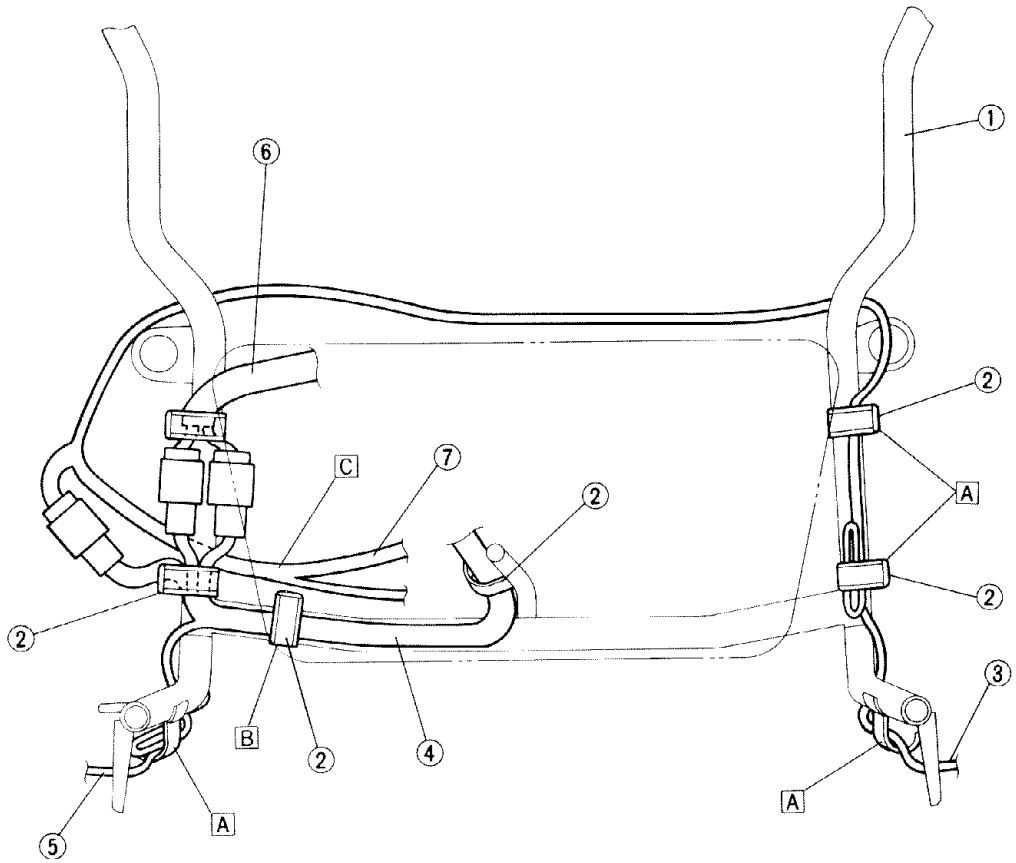
① Front brake hose
② Handlebar switch (right)
③ Throttle cable
④ Clamp
⑤ Radiator breather hose
⑥ Handlebar switch (left) lead
⑦ Clutch cable
⑧ Main switch lead

[A] Pass the brake hose right side of cowling stay.
[B] Pass the handlebar switch (left) lead in front of inner tube.
[C] Pass the throttle cables in front of brake hose.
[D] Clamp the throttle cables and handlebar switch (left) lead.
[E] Clamp the handlebar switch (left) and main switch leads.



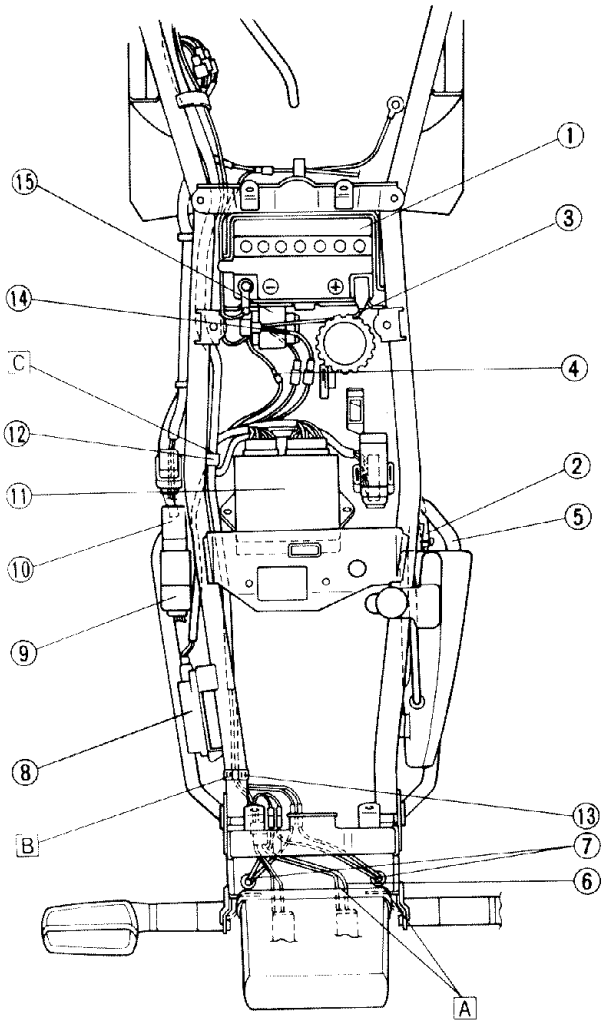
① Cowling stay
② Clamp
③ Flasher light (left) lead
④ Wireharness
⑤ Flasher light (right) lead
⑥ Meter light lead

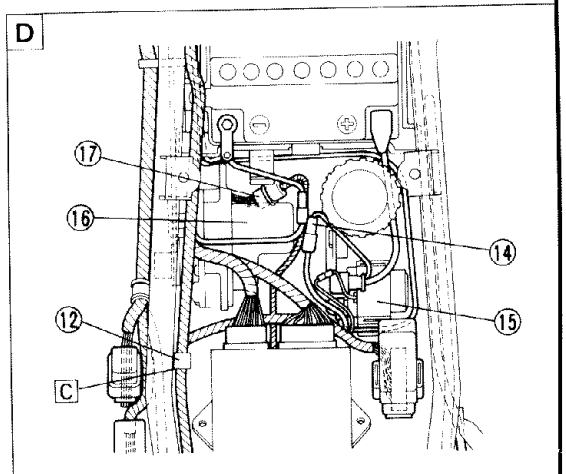
[A] Clamp the flasher light lead.
[B] Clamp the wireharness.
[C] Pass the headlight lead in front of the cowling stay.



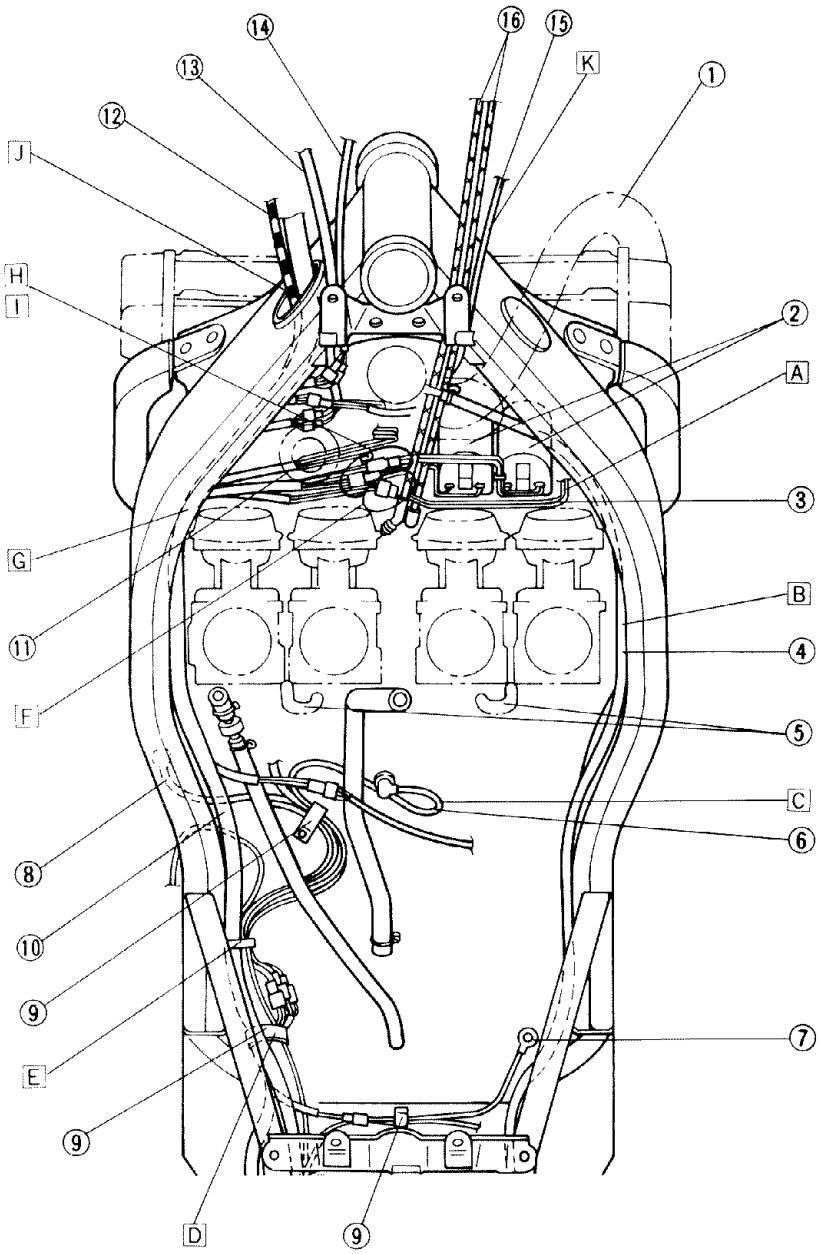
① Battery
② Coolant reservoir hose
③ Battery positive lead
④ Starter relay lead
⑤ Breather hose (coolant reservoir hose)
⑥ Taillight lead
⑦ Rear flasher light lead
⑧ Rectifier/regulator
⑨ Flasher relay
⑩ Relay assembly
⑪ Ignitor unit
⑫ Clamp
⑬ Band
⑭ Starter relay lead
⑮ Starter relay
⑯ Exup servo motor
⑰ Exup servo motor lead

[A] Pass the flasher light lead through the hole in rear fender.
[B] Clamp the taillight and rear flasher light lead.
[C] Clamp the wireharness.
[D] For California only

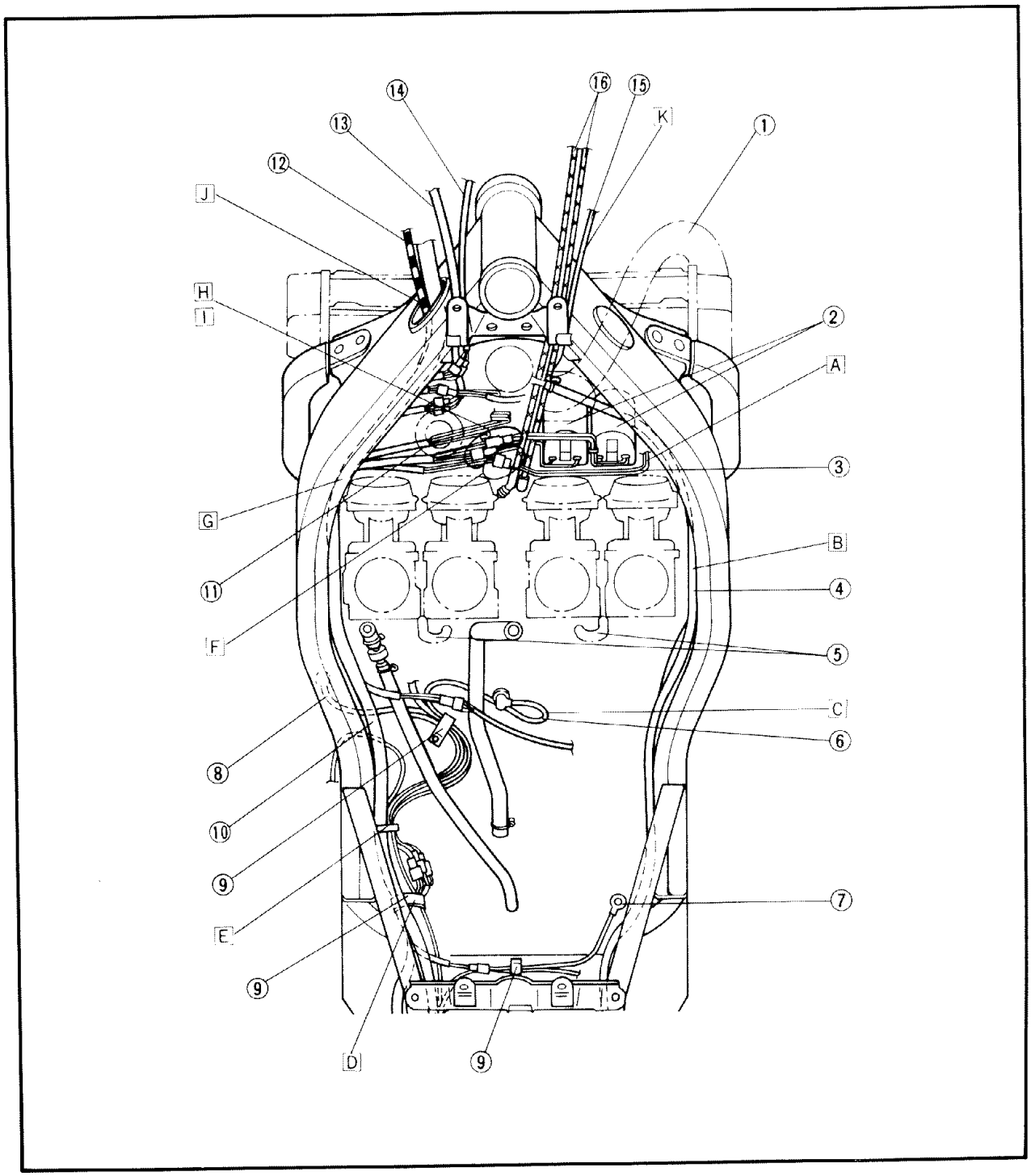




① Radiator hose
② Ignition coil
③ Fan motor lead
④ Radiator breather hose
⑤ Carburetor breather hose
⑥ Starter motor lead
⑦ Ground lead
⑧ A.C. Generator lead
⑨ Clamp
⑩ Wireharness
⑪ Thermo unit
⑫ Clutch cable
⑬ Handlebar switch (left) lead
⑭ Main switch lead
⑮ Handlebar switch (right) lead
⑯ Throttle cable

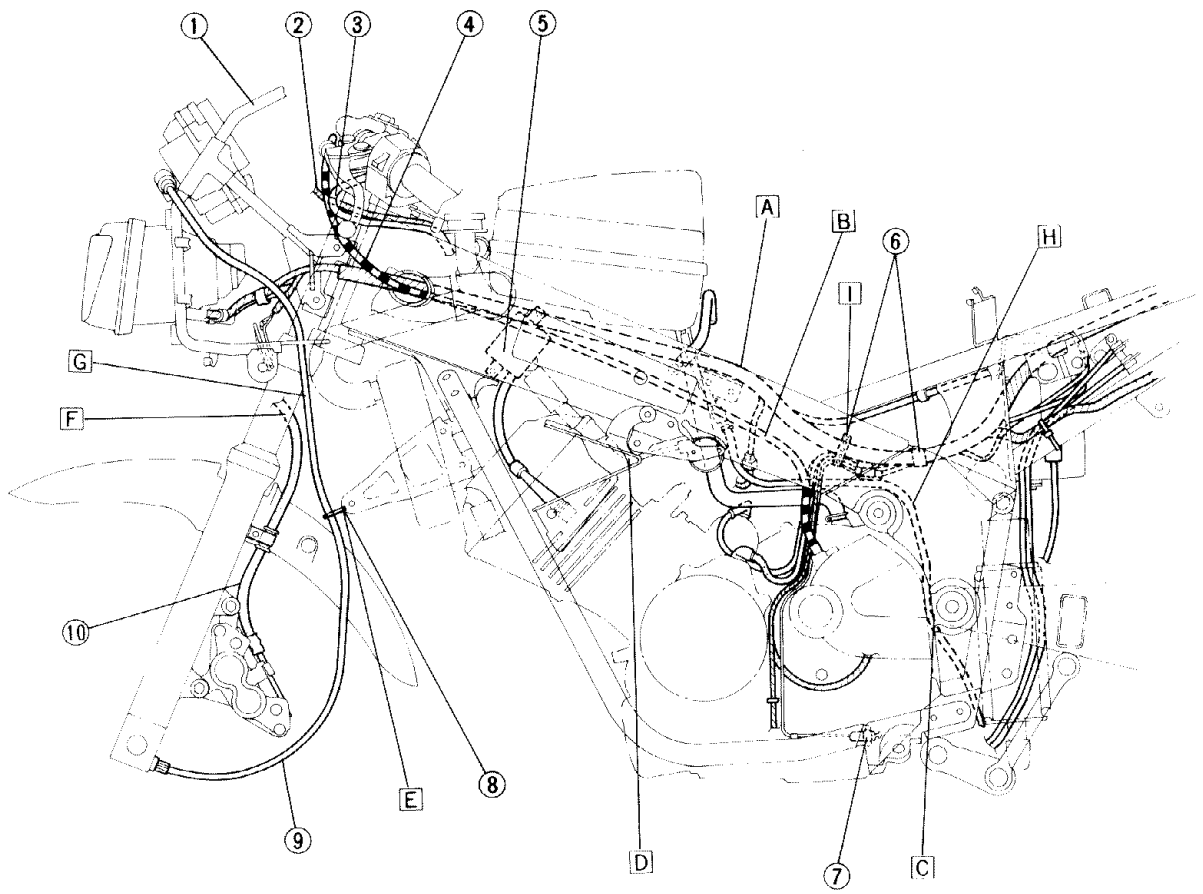


[A] Pass the fan motor lead behind the ignition coil.
[B] Pass the radiator breather hose between the carburetor and frame.
[C] Pass the starter motor lead below the starter motor.
[D] Clamp the wireharness.
[E] Clamp the A.C. magneto, neutral, oil level switch and sidestand switch leads.
[F] Pass the fan motor and ignition coil leads between the throttle cables, and connect them between the conductor and thermo unit.
[G] Position the wireharness so that the white tape is positioned on thermo unit.
[H] Connect the main switch lead between the conductor and thermo unit.
[I] Locate the main switch lead coupler in front of air filter case bracket.
[J] Pass the clutch cable and wireharness through the frame hole.
[K] Pass the throttle cables and handlebar switch lead between the radiator hoses.



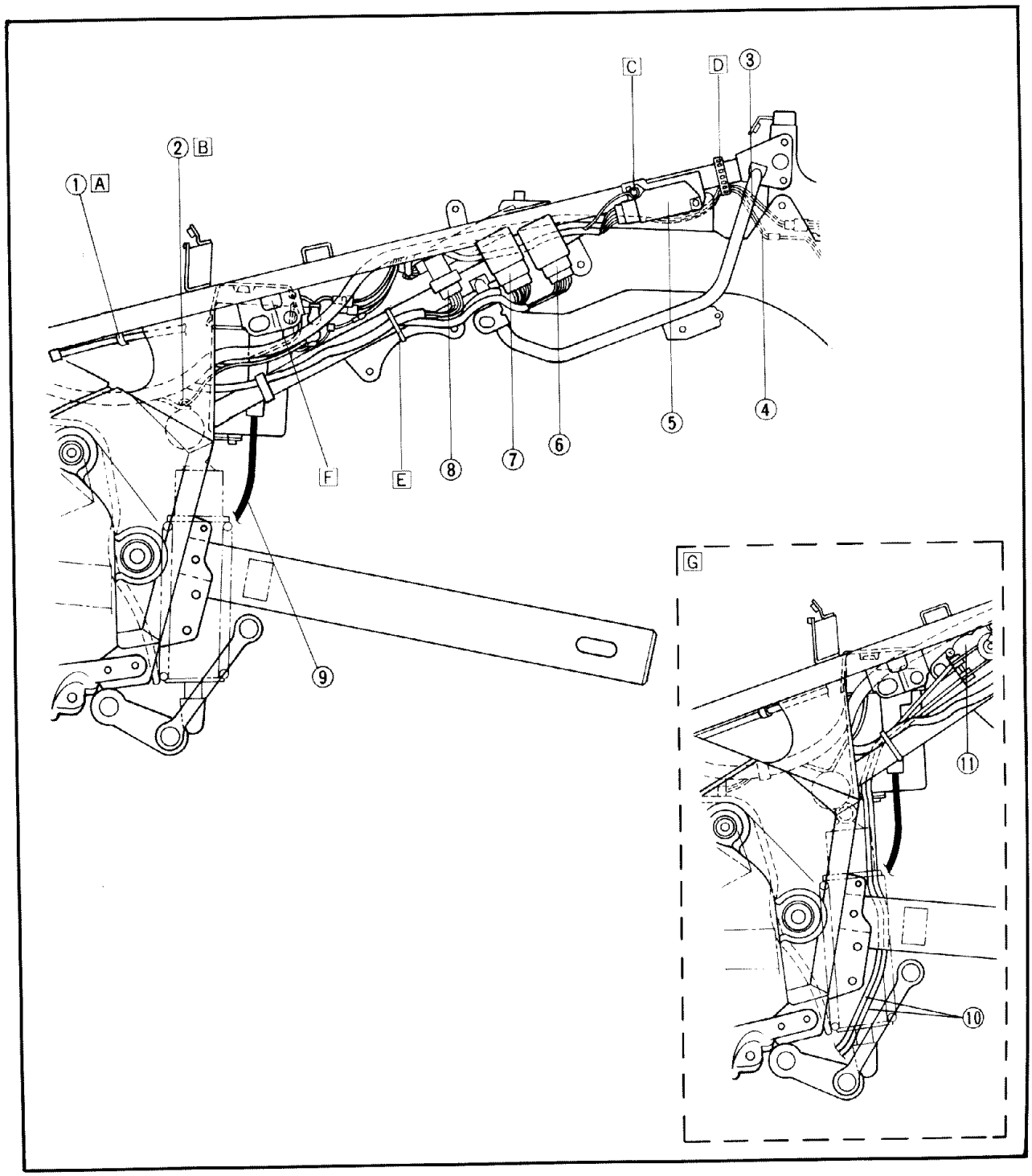
① Cowling stay
② Main switch lead
③ Handlebar switch (left) lead
④ Clutch cable
⑤ Thermo unit
⑥ Clamp
⑦ Sidestand switch
⑧ Cable guide
⑨ Speedometer cable
⑩ Front brake hose

[A] Pass the wireharness above the fuel tank bracket.
[B] Pass the clutch cable inside the frame.
[C] Pass the air filter breather hose between the engine and swingarm.
[D] Pass the starter cable behind of the air intake duct.
[E] Pass the speedometer cable through the holder.
[F] Pass the speedometer cable outside of the front fork.
[G] Pass the brake hose inside of the front fork.
[H] Pass the air filter drain hose above the engine mounting bolt, and in front of pivot shaft.
[I] Clamp the sidestand, pickup coil, neutral switch, oil level switch and starter relay leads.

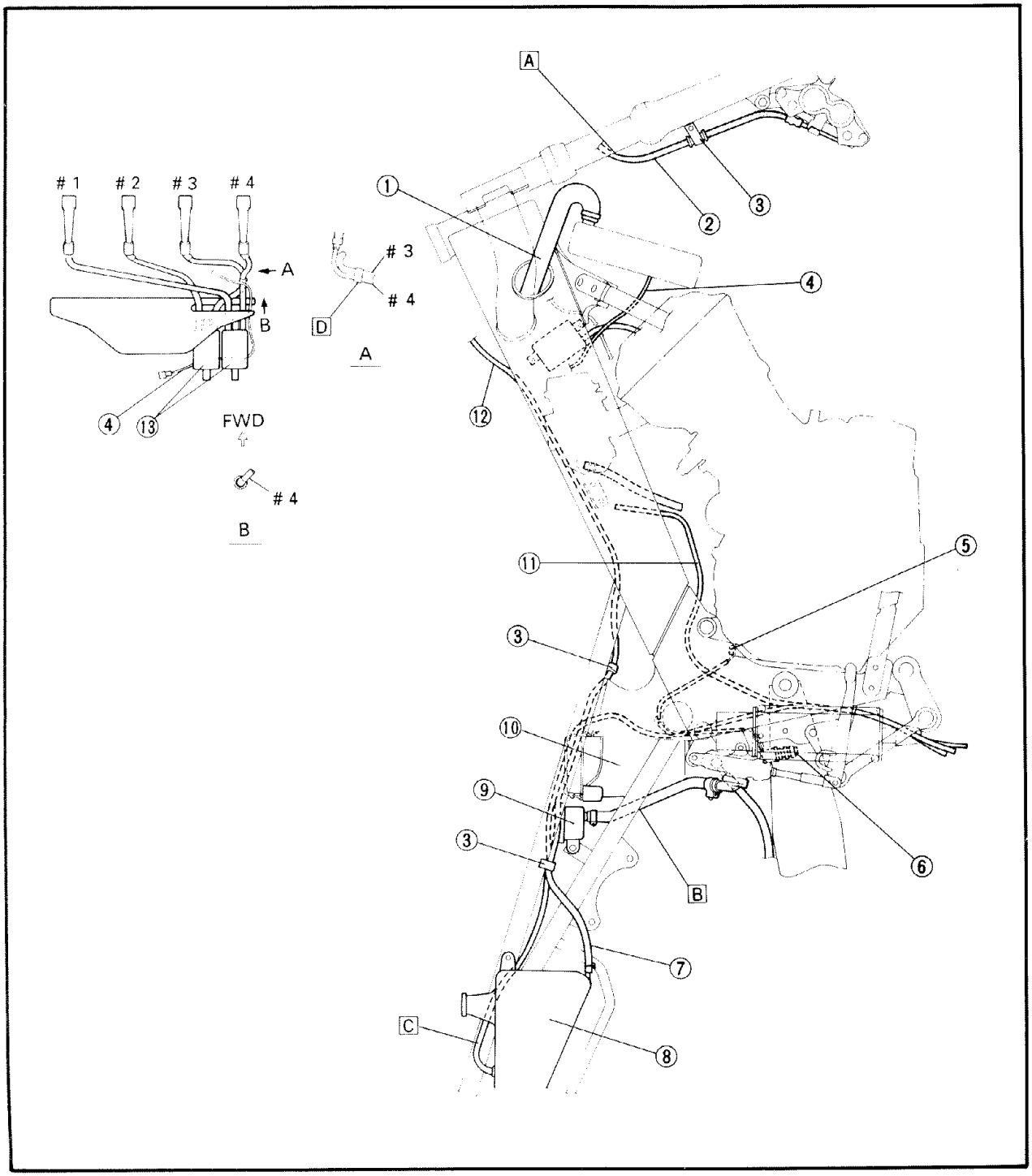


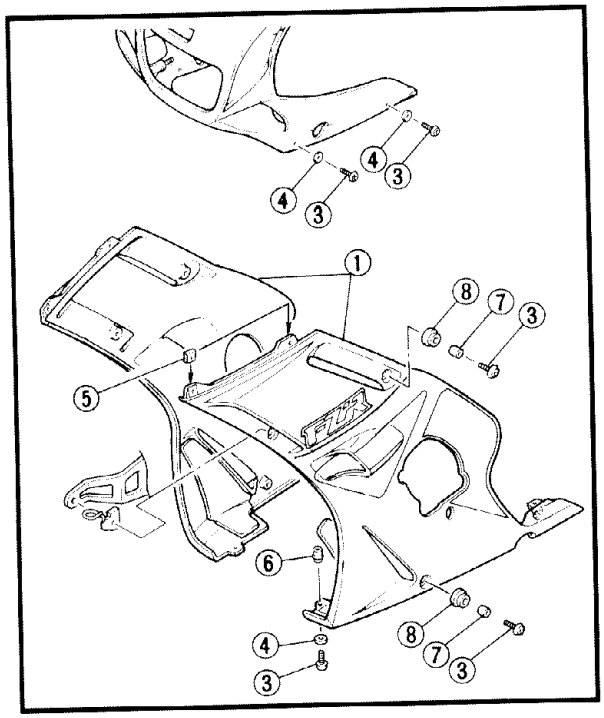
① Clamp
② Ground lead
③ Taillight lead
④ Rear flasher lead
⑤ Rectifier/regulator
⑥ Flasher relay
⑦ Relay assembly
⑧ Main fuse
⑨ Battery breather hose
⑩ "EXUP" control cable
⑪ "EXUP" servo motor

[A] Clamp the main wireharness.
[B] Clamp the rear brake switch and ground leads.
[C] Secure the ground lead with the screw (rectifier/regulator).
[D] Clamp the flasher light lead and taillight leads.
[E] Clamp the wireharness on left side of frame.
[F] Pass the wireharness above the battery box.
[G] For California only



① Radiator hose
② Front brake hose
③ Clamp
④ Fan motor lead
⑤ Ground
⑥ Rear brake switch
⑦ Reservoir tank hose
⑧ Coolant reservoir tank
⑨ Reservoir tank (master cylinder-rear brake)
⑩ Battery
⑪ Bleeder hose (fuel filler cover)
⑫ Overflow hose (radiator)
⑬ Ignition coil
[A] Pass the brake hose inside of the front fork.
[B] Pass the reservoir hose inside of the back stay.
[C] Pass the overflow hose (radiator) between the coolant reservoir tank and seat rail.
[D] Clamp the spark plug leads (#3 and #4) together. For the spark plug lead #4, be sure to clamp on the while mark.





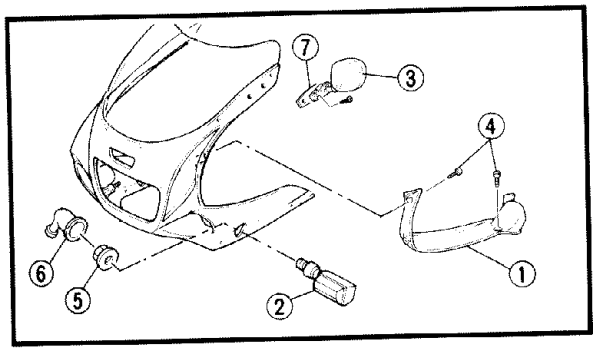
PERIODIC INSPECTION AND ADJUSTMENT

COWLINGS/COVERS REMOVAL AND INSTALLATION

REMOVAL

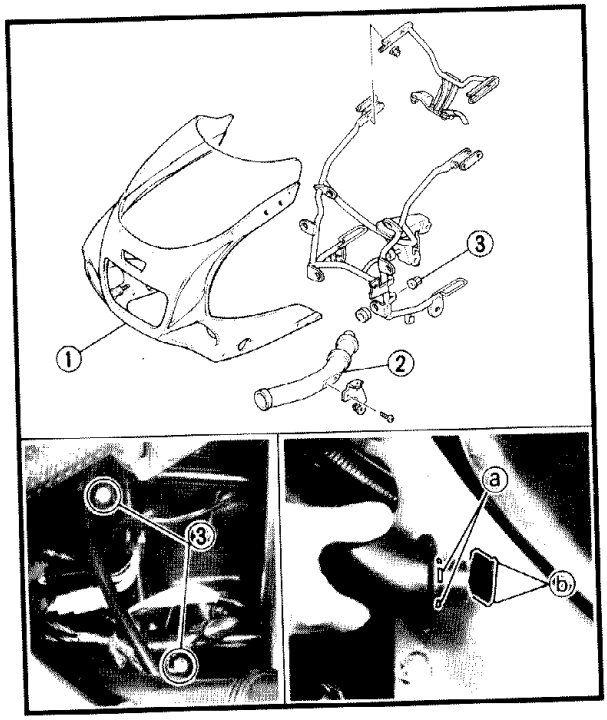
1. Remove:
   - Side cowlings (left ① and right ②)

③ Bolt
④ Plastic washer
⑤ Spring nut
⑥ Special nut
⑦ Collar
⑧ Damper



2. Remove:
   - Duct covers (left and right) ①
   - Flasher lights (left and right) ②
   - Rear view mirror (left and right) ③

④ Screw
⑤ Nut
⑥ Cap
⑦ Damper



3. Remove:
   - Upper cowling ①

CAUTION:

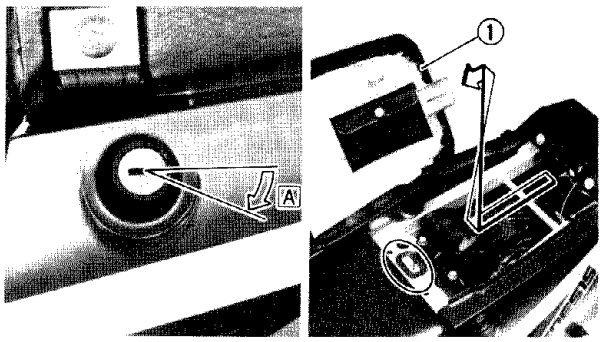
Remove the headlight together with the upper cowling to prevent the headlight from falling out.

4. Remove:
   - Air intake ducts (left and right) ②

NOTE:

Align the projections ⓐ on the duct with the slots ⓑ in the frame.

③ Nut

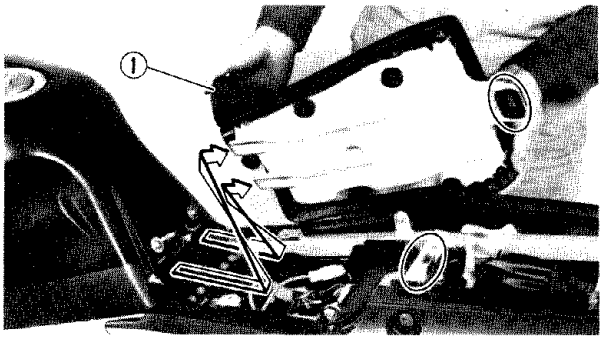


Covers

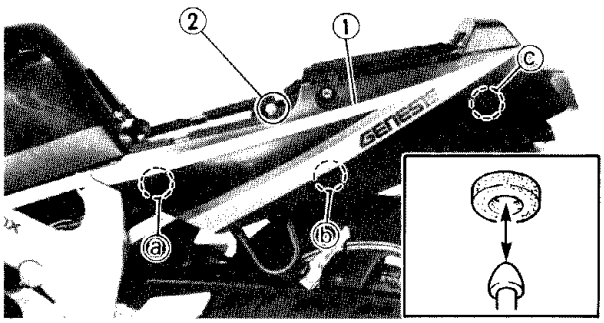
1. Remove:
   - Passenger seat ①

NOTE:

Insert the key into the lock and turn it clockwise [A] to release the seat lock.



2. Remove:
   - Rider seat ①



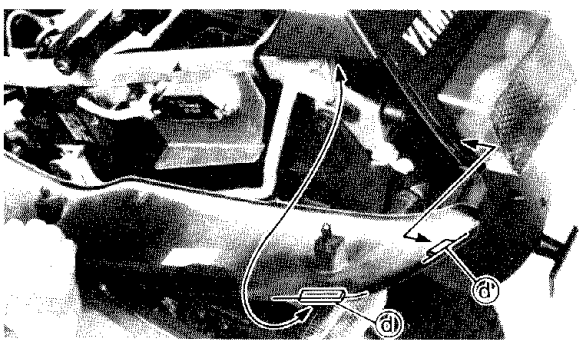
3. Remove:
   - Side covers (left and right) ①

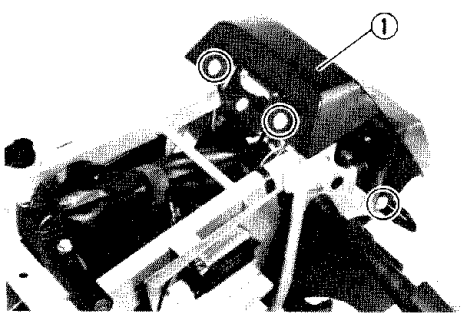
****

Removal Steps:

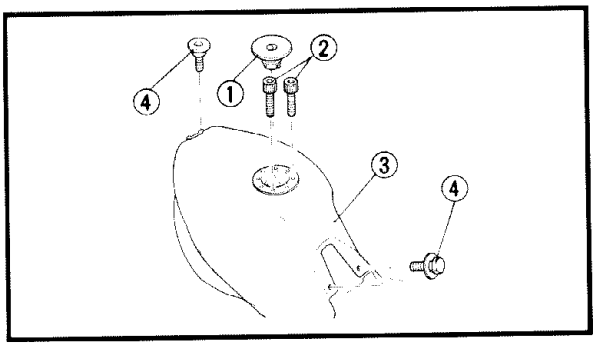
- Remove the screws ②.
- Unhook the projections ⓐ, ⓑ and ⓒ on the side cover from the grommets on the frame.
- Unhook the hooks ⓓ on the side cover from the slots in the trail cover.

****



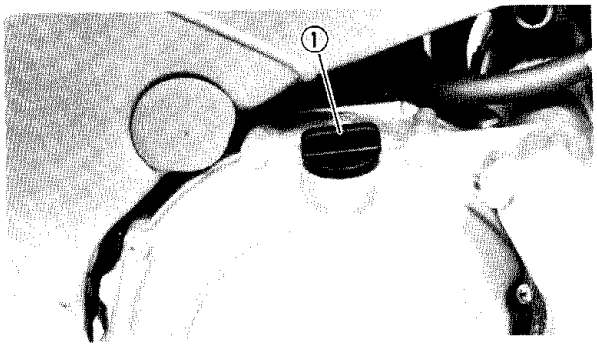


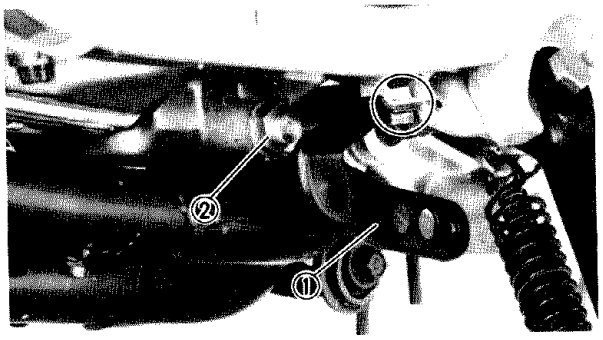
4. Remove:
   - Tail cover ①



5. Remove:
   - Fuel tank cap ①
   - Socket head bolt ②
   - Top cover ③

④ Bolt





ENGINE

ENGINE OIL REPLACEMENT

1. Remove:
   - Side cowlings
     Refer to "COWLING REMOVAL, AND INSTALLATION" section.
2. Warm up the engine for several minutes.
3. Place a drain pan under the engine.
4. Remove:
   - Oil filler cap ①
5. Remove:
   - Stay (Side cowling-left) ①
   - Drain plug ②
     Drain the engine oil.
6. Inspect:
   - O-ring (oil filler cap)
   - Gasket (drain plug)
     Damage → Replace.
7. Tighten:
   - Drain plug ①

	Oil drain plug: **43 Nm (4.3 m·kg, 31 ft·lb)**

8. Fill:
   - Crankcase

CAUTION:

- **Do not add any chemical additives. Engine oil also lubricates the clutch and additives could cause clutch slippage.**
- **Be sure no foreign material enters the crankcase.**

Periodic oil change:
2.2 L (1.9 Imp qt, 2.4 US qt)
Recommended engine oil:
At 5°C (40°F) or higher:
YAMALUBE-4 (20W40) or
SAE 20W40 type SE motor oil
At 15°C (60°F) or lower:
YAMALUBE-4 (10W30) or
SAE 10W30 type SE motor oil

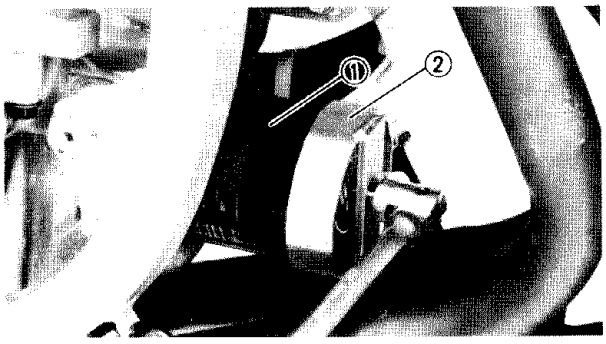
9. Install:
   - Oil filler cap
   - Stay (side cowling-left)
   - Side cowlings

ENGINE OIL FILTER REPLACEMENT

1. Remove:
   - Side cowlings

   Refer to "COWLING/COVERS REMOVAL AND INSTALLATION" section.
2. Drain:
   - Engine oil

   Refer to "ENGINE OIL REPLACEMENT" section.



3. Remove:
   - Oil filter ①

   Use the oil filter wrench ② .

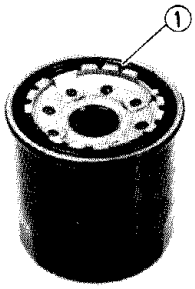
Oil filter wrench:
J-37140A
90890-04126

4. Inspect:
   - O-ring (oil filler cap)
   - Gasket (drain plug)

   Wear/Damage → Replace.
5. Install:
   - Drain plug

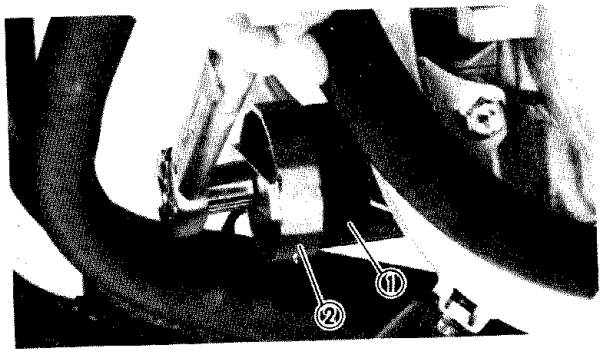
   (with gasket)

Drain plug:
43 Nm (4.3 m·kg, 31 ft·lb)



6. Apply:
   • Engine oil (lightly)
   (to O-ring ① of new oil filter)

NOTE:
Make sure the O-ring ① is positioned properly.



7. Install:
   • Oil filter (new) ①
8. Tighten:
   • Oil filter ①
   Use the oil filter wrench ② .

Oil filter wrench:
J-37140A
90890-04126

Oil filter:
17 Nm (1.7 m·kg, 12 ft·lb)

9. Fill:
   • Crankcase
   Refer to "ENGINE OIL REPLACEMENT" Section for recommended engine oil.

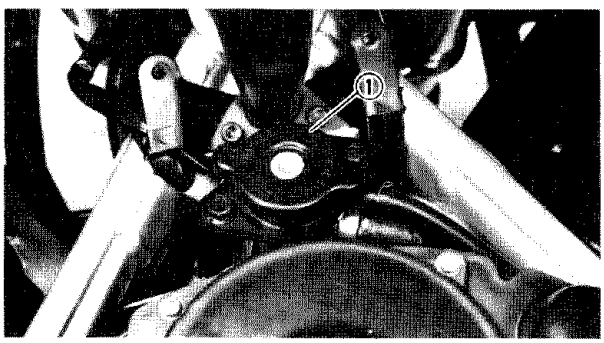
With oil filter replacement:
2.5 L (2.2 Imp qt, 2.64 US qt)

10. Warm up the engine for a few minutes, then stop the engine.
11. Inspect:
    • Oil leaks
    • Oil level
12. Install:
    • Side cowlings

COOLANT REPLACEMENT

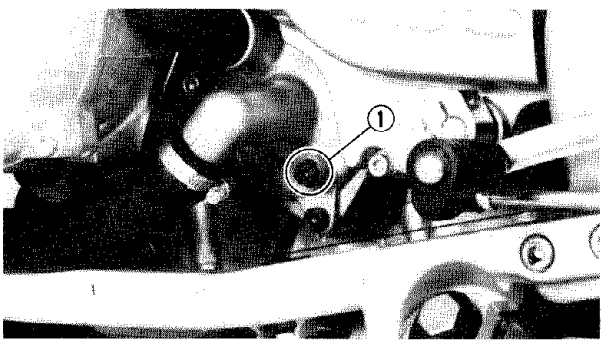
⚠ WARNING

Do not remove the radiator cap when the engine and radiator are hot. Scalding hot fluid and steam may be blown out under pressure, which could cause serious injury. When the engine has cooled, open the radiator cap by the following procedure:
Place a thick rag, like a towel, over the radiator cap. slowly rotate the cap counterclockwise to the detent. This procedure allows any residual pressure to escape. When the hissing sound has stopped, press down on the cap while turning counterclockwise and remove it.

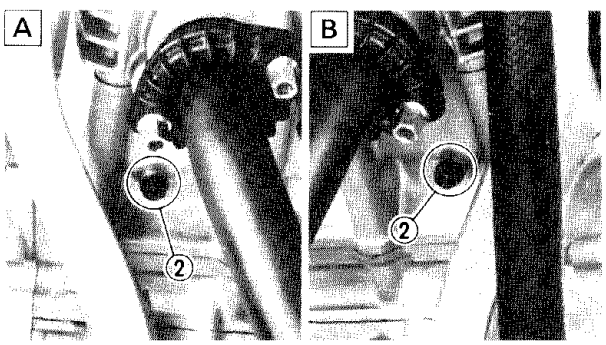


1. Remove:
   - Side cowlings (left and right)
   - Seats (passenger and rider)
   - Top cover

   Refer to "COWLINGS/COVERS REMOVAL AND INSTALLATION" section.
2. Remove:
   - Radiator cap ①



3. Place a drain pan under the drain bolts.
4. Remove:
   - Drain bolt (water pump) ①



5. Remove:
   - Drain bolt (cylinder) ②

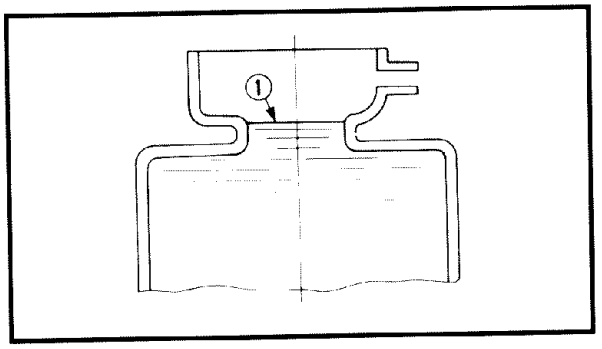
   Drain the coolant.

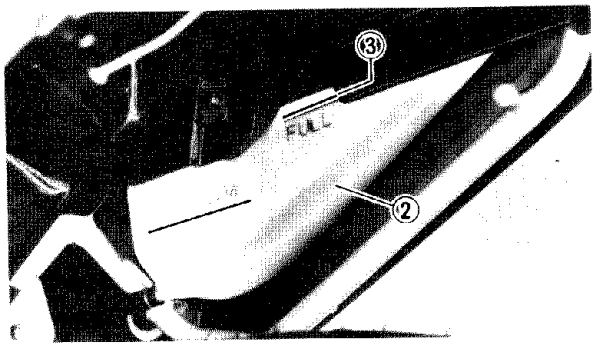
A Right
B Left

6. Inspect:
   - Gasket (drain bolts – water pump)
   - Gasket (drain bolt – cylinder)

   Damage → Replace.
7. Tighten:
   - Drain bolts

Drain bolt:
7 Nm (0.7 m·kg, 5.1 ft·lb)





8. Fill:
   - Cooling system

****

Coolant filling steps:

- Fill the coolant into the radiator until the radiator is full.
- Start the engine (coolant level decreases).

CAUTION:

Always check coolant level, and check for coolant leakage before starting engine.

- Add the coolant while engine is running.
- Stop the engine when coolant level stabilizes.
- Add the coolant again to specified level ①.
- Install the radiator cap.
- Fill the reservoir tank ② with coolant up to "FULL" level ③.
- Install the reservoir tank cap.

****

Recommended coolant:
High quality ethylene glycol anti-freeze containing corrosion inhibitors for aluminum engines.

Coolant and water mixed ratio:
50%/50%

Total amount:
2.2 L (1.9 Imp qt, 2.3 US qt)

Reservoir tank capacity:
0.28 L (0.25 Imp qt, 0.30 US qt)

From "LOW" to "FULL" level:
0.18 L (0.16 Imp qt, 0.19 US qt)

****

Handling notes of coolant:
The coolant is harmful so it should be handled with special care.

⚠WARNING

- **When coolant splashes to your eye.**
  Thoroughly wash your eye with water and see your doctor.
- **When coolant splashes to your clothes.**
  Quickly wash it away with water and then with soap.
- **When coolant is swallowed.**
  Quickly make him vomit and take him to a doctor.

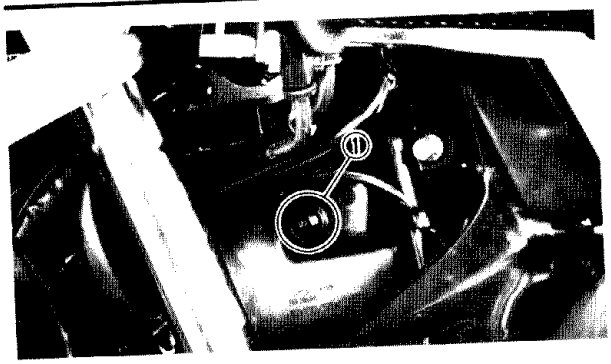
****

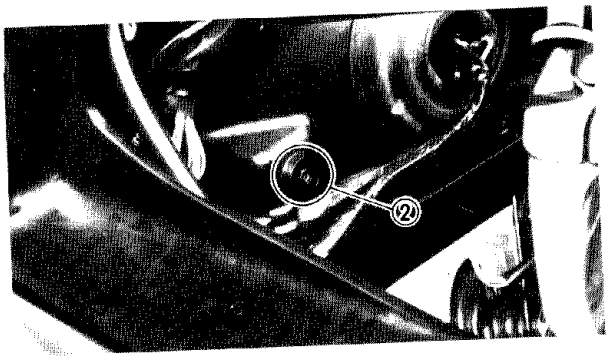
CAUTION:

- **Hard water or salt water is harmful to the engine parts; use boiled or distilled water if you can't get soft water.**
- **Do not use water containing impurities or oil.**
- **Take care so that coolant does not splash to painted surfaces. If splashes, wash it away with water.**

9. Install:
   - Top cover
   - Seats (passenger and rider)
   - Side cowlings (left and right)

   Refer to "COWLINGS/COVERS REMOVAL AND INSTALLATION" section.





ELECTRICAL

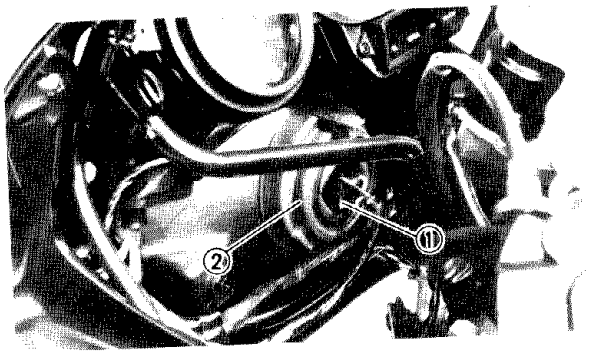
HEADLIGHT BEAM ADJUSTMENT

1. Adjust:
   - Headlight beam (horizontally)

Horizontal adjustment	
Right	Turn adjusting screw ① clockwise
Left	Turn adjusting screw ① counter-clockwise

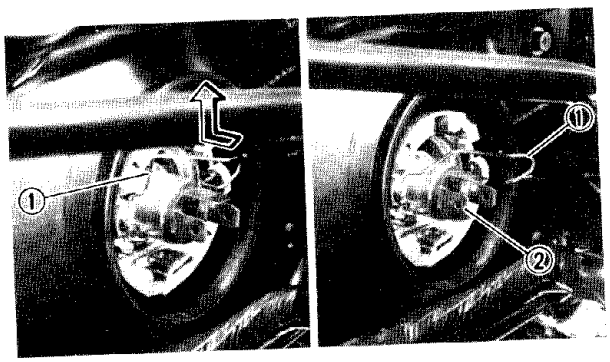
2. Adjust:
   - Headlight beam (vertically)

Vertical adjustment	
Higher	Turn the adjusting screw ② counterclockwise
Lower	Turn the adjusting screw ② clockwise



HEADLIGHT BULB REPLACEMENT

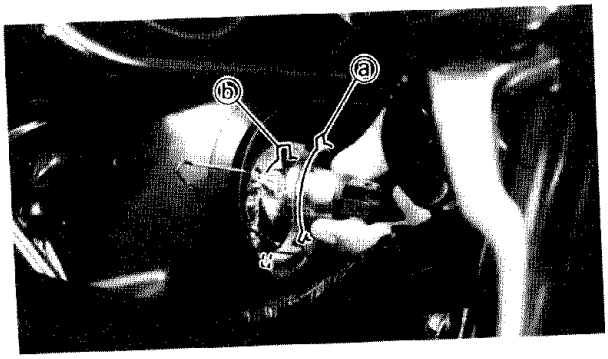
1. Disconnect:
   - Headlight coupler ①
2. Remove:
   - Headlight bulb cover ②



3. Unhook:
   - Bulb holding spring ①
4. Remove:
   - Bulb (defective) ②

⚠ WARNUNG

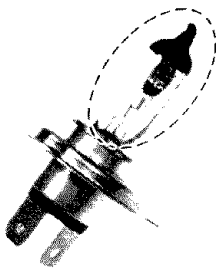
Keep flammable products or your hands away from the bulb while it is on, it will be hot. Do not touch the bulb until it cools down.



5. Install:
   - Bulb (new)

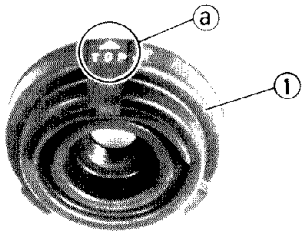
NOTE:

Make sure the projections ⓐ on the bulb are meshed with the slot ⓑ in the bulb case.



CAUTION:

Avoid touching the glass part of the bulb. Keep it free from oil; otherwise, the transparency of the glass, life of the bulb, and illuminous flux will be adversely affected. If oil gets on the bulb, throughly clean it with a cloth moistened with alcohol or lacquer thinner.



6. Hook:
   - Bulb holding spring
7. Install:
   - Headlight bulb cover ①

NOTE:

Install the bulb covers so that the "TOP" mark faces a upward.

8. Connect:
   - Headlight coupler

ENGINE OVERHAUL

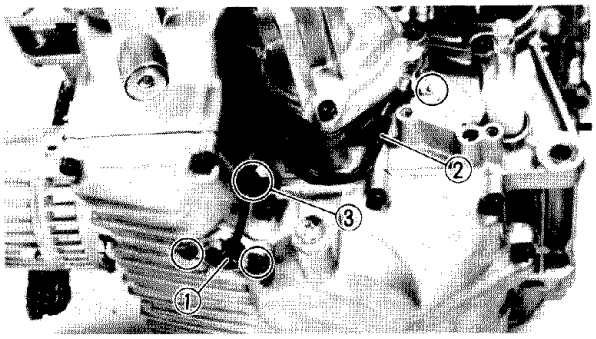
ENGINE DISASSEMBLY

OIL PAN AND OIL STRAINER

NOTE:

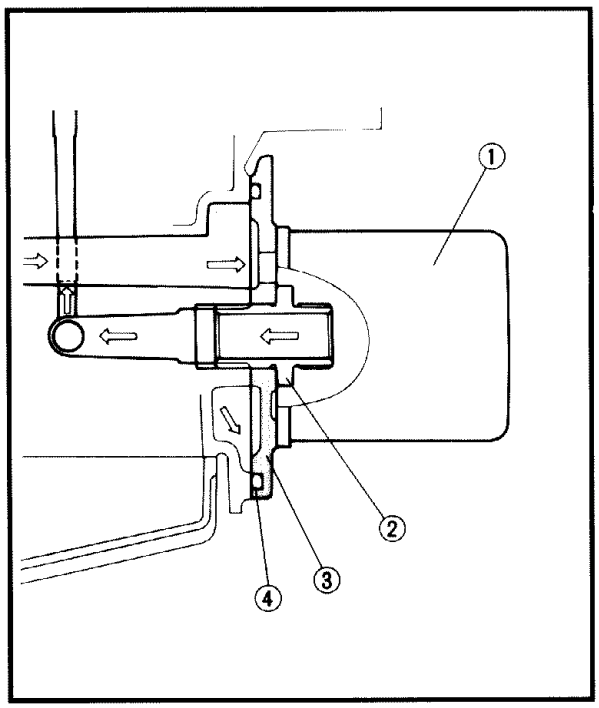
With the engine mounted, the oil pan and oil strainer can be maintained by removing the following parts.

- Side cowlings (left and right)
- Cowling stay
- Exhaust pipe assembly



1. Disconnect:
   - Oil level switch lead ①
   - Neutral switch lead ②

③ Clamp

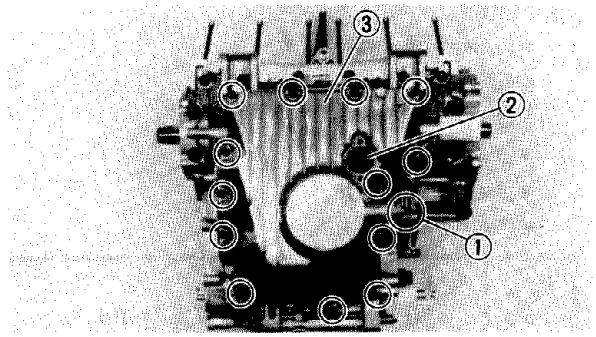


2. Remove:
   - Oil filter ①

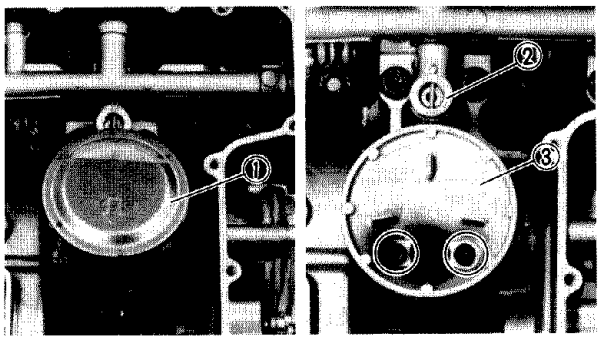
   Use the oil filter wrench

Oil filter wrench:
J-37140A
90890-04126

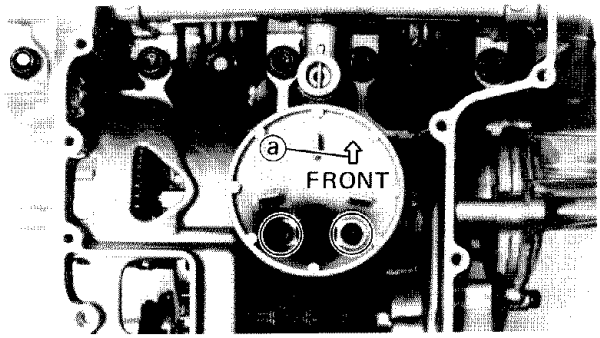
3. Remove:
   - Bolt ②
   - Adapter plate ③
   - O-ring ④



4. Remove:
   - Drain plug ①
   - Oil level switch ②
   - Oil pan ③
   - Gasket (oil pan)
   - Dowel pins



5. Remove:
   - Oil strainer cover ①
   - Relief valve ②
   - Oil strainer assembly ③



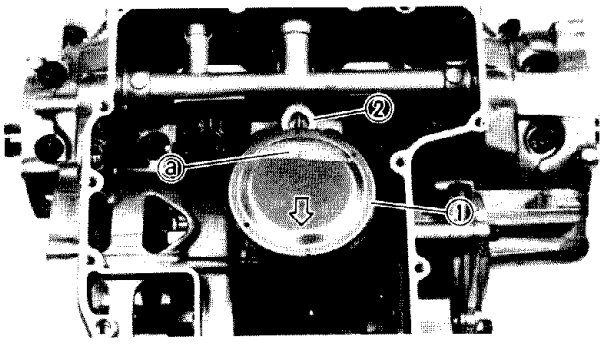
ENGINE ASSEMBLY AND ADJUSTMENT

OIL PAN AND OIL STRAINER

1. Install:
   - Oil strainer assembly

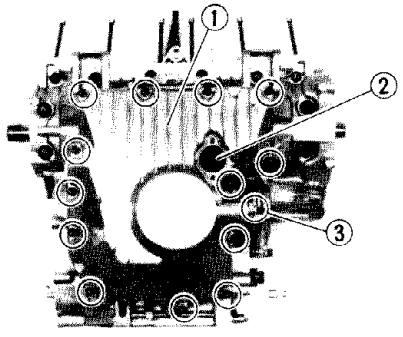
	Bolts (oil strainer assembly): 10 Nm (1.0 m·kg, 7.2 ft·lb)

NOTE:
Install the oil strainer assembly so that the arrow mark ⓐ face forward.



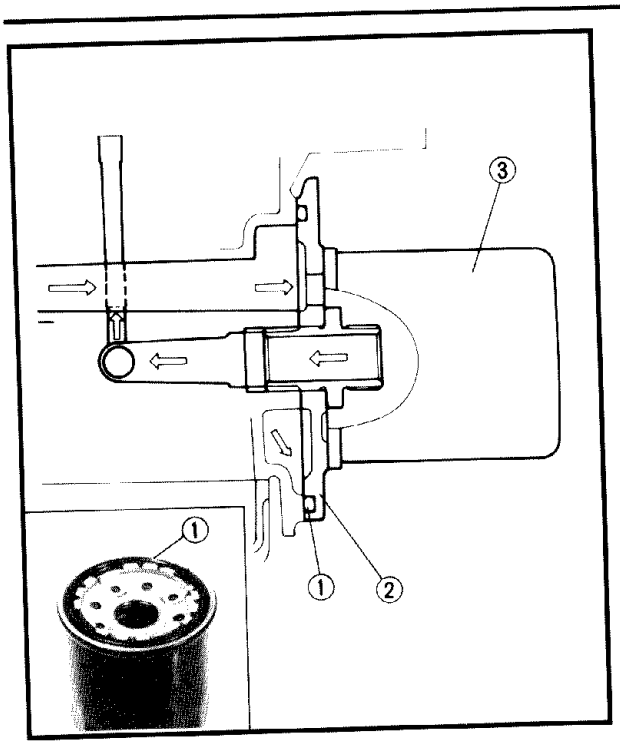
2. Install:
   - Oil strainer cover ①
   - Relief valve ②

NOTE:
The element (window) ⓐ must be installed vertically against housing arrow mark.



3. Install:
   - Dowel pins
   - Gasket (new)
   - Oil pan ①
   - Oil level switch ②
   - Drain plug ③
   - Clamp

	Bolts (oil pan): 10 Nm (1.0 m·kg, 7.2 ft·lb)



4. Apply:
   - Engine oil (lightly)
     (to O-rings ① of adapter plate ② and new oil filter ③)

NOTE:
Make sure the O-rings ① is positioned properly.

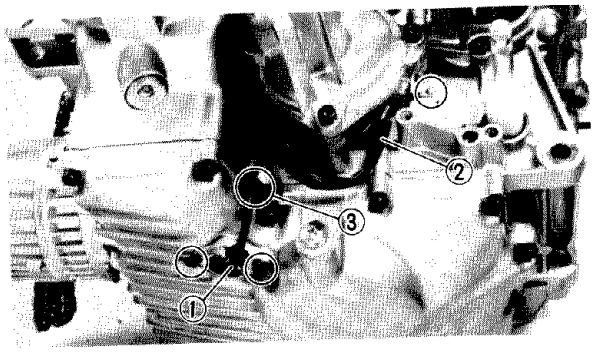
5. Install:
   - Adapter plate ②

Bolt (adapter plate):
50 Nm (5.0 m·kg, 36 ft·lb)

6. Install:
   - Oil filter (new) ③
7. Tighten:
   - Oil filter
     Use the oil filter wrench

Oil filter wrench:
J-37140A
90890-04126

Oil filter:
17 Nm (1.7 m·kg, 12 ft·lb)



8. Connect:
   - Oil level switch lead ①
   - Neutral switch lead ②

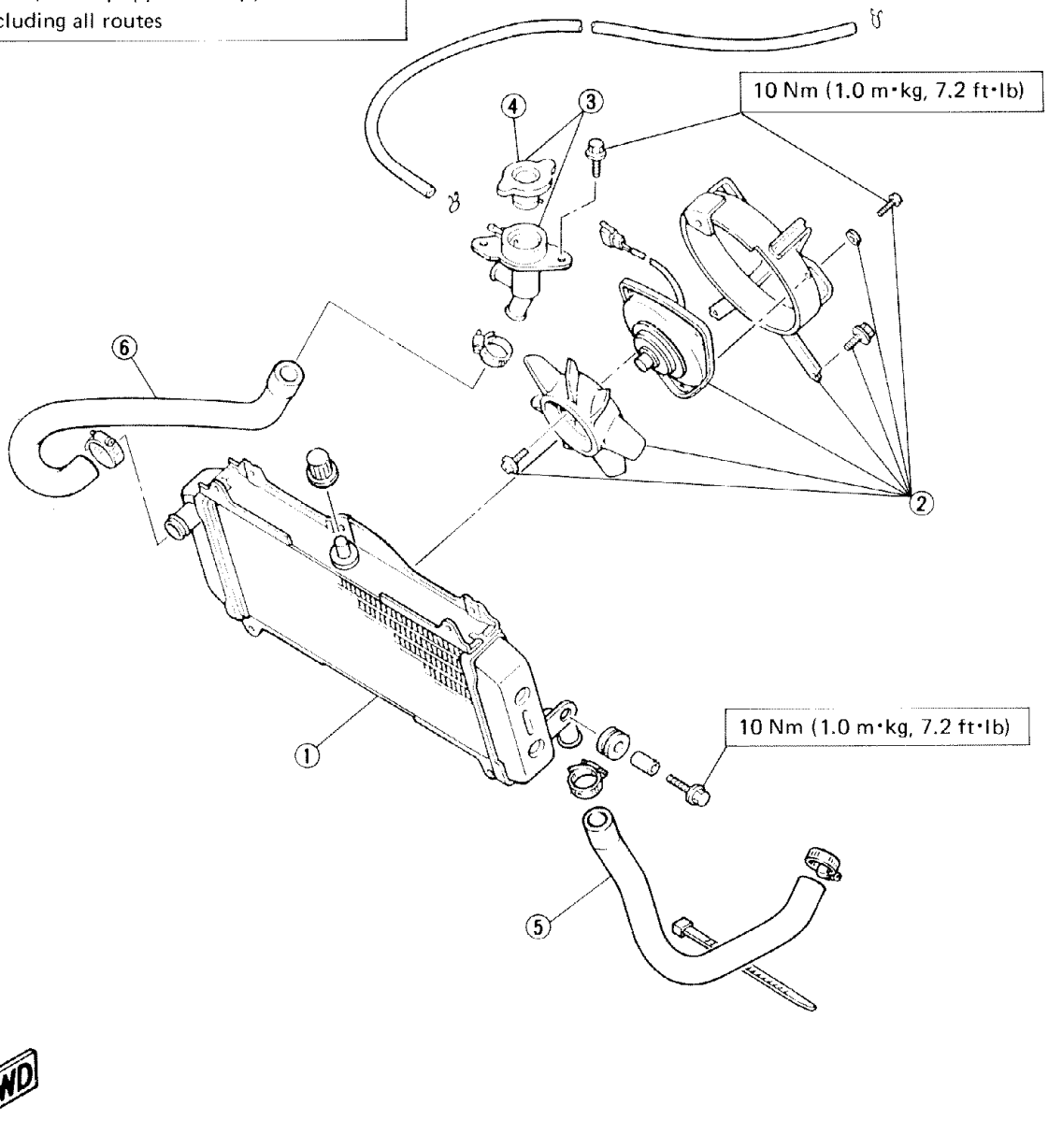
③ Clamp

COOLING SYSTEM

RADIATOR

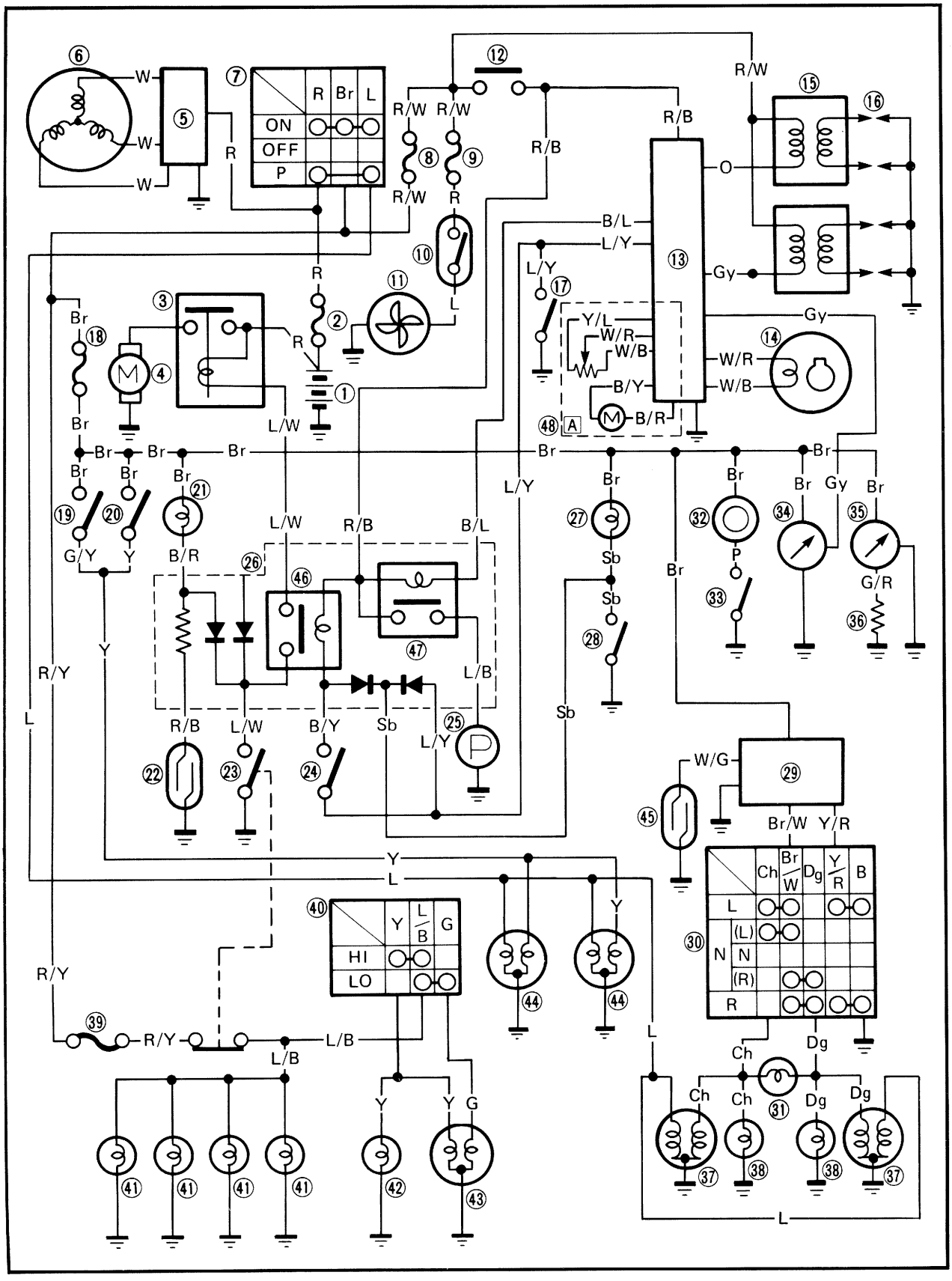
① Radiator assembly
② Fan motor assembly
③ Radiator cap assembly
④ Radiator cap
⑤ Outlet hose (radiator)
⑥ Inlet hose (radiator)

A	RADIATOR CAP OPENING PRESSURE: 74 ~ 103 kPa (0.75 ~ 1.05 kg/cm², 10.7 ~ 14 9 psi)
B	COOLANT CAPACITY: 2.2 L (1.9 Imp qt, 2.3 US qt) Including all routes



ELECTRICAL

FZR600RB/FZR600RBC CIRCUIT DIAGRAM



① Battery
② Fuse (main)
③ Starter relay
④ Starter motor
⑤ Rectifier/Regulator
⑥ A.C. magneto generator
⑦ Main switch
⑧ Fuse (ignition)
⑨ Fuse (fan)
⑩ Thermo switch
⑪ Fan motor
⑫ "ENGINE STOP" switch
⑬ Ignitor unit
⑭ Pickup coil
⑮ Ignition coil
⑯ Spark plug
⑰ Side stand switch
⑱ Fuse (signal)
⑲ Front brake switch
⑳ Rear brake switch
㉑ "OIL LEVEL" indicator light
㉒ Oil level switch
㉓ "START" switch
㉔ Clutch switch
㉕ Fuel pump
㉖ Relay assembly
㉗ Neutral indicator light
㉘ Neutral switch
㉙ Flasher relay
㉚ "TURN" switch
㉛ "TURN" indicator light
㉜ Horn
㉝ "HORN" switch
㉞ Tachometer
㉟ Engine temperature gauge
㊱ Thermo unit
㊲ Front position light/Front flasher light
㊳ Rear flasher light
㊴ Fuse (head)
㊵ "LIGHTS" (dimmer) switch
㊶ Meter light
㊷ "HIGH BEAM" indicator light
㊸ Headlight
㊹ Tail/brake light
㊺ Reed switch
㊻ Starting circuit cut-off relay
㊼ Fuel pump relay
㊽ "EXUP" servo motor

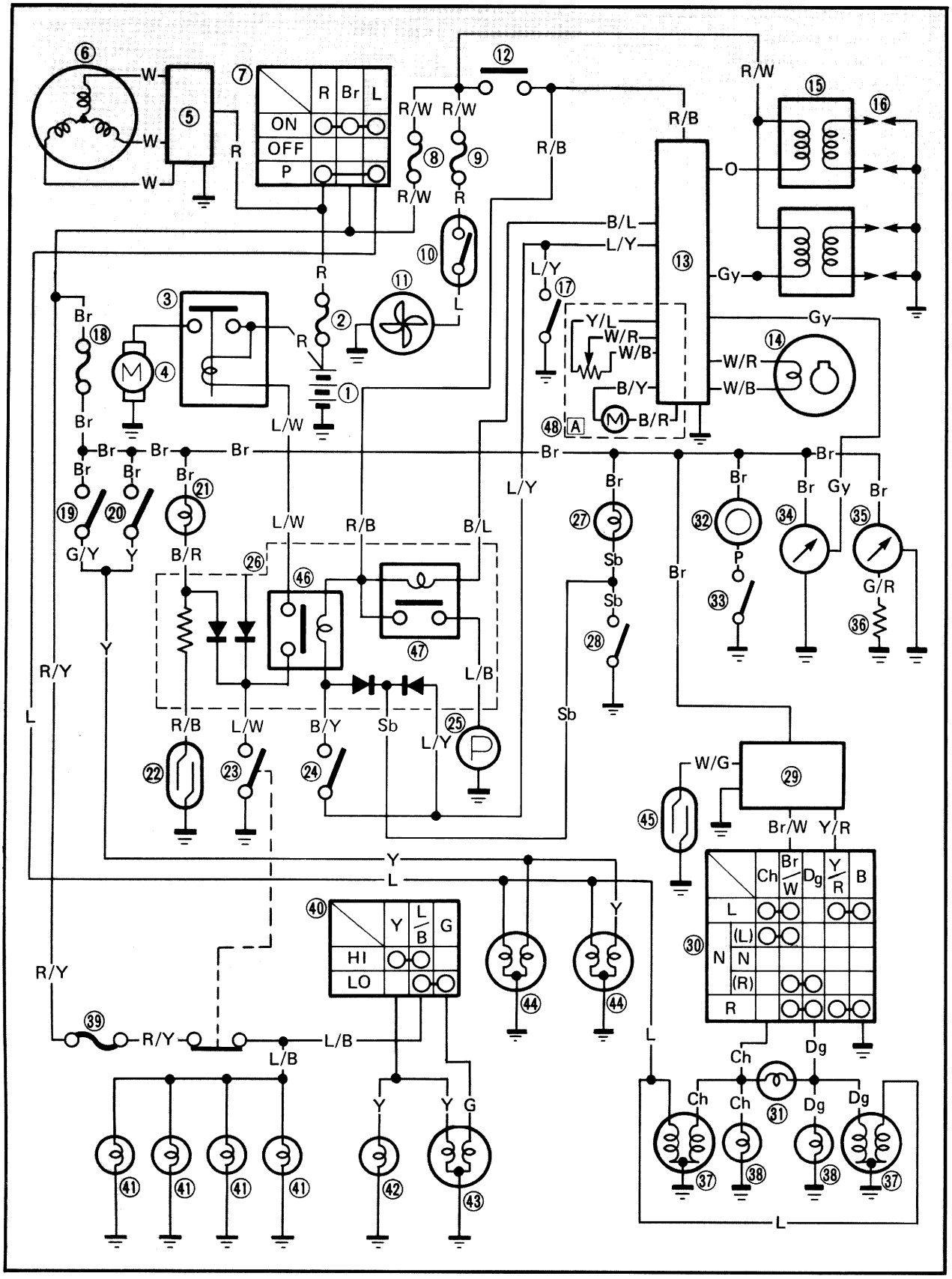
[A] For California only

COLOR CODE

B	Black	Dg	Dark green	L/W	Blue/White
R	Red	W	White	G/R	Green/Red
L	Blue	B/R	Black/Red	G/Y	Green/Yellow
G	Green	B/L	Black/Blue	Y/R	Yellow/Red
O	Orange	B/Y	Black/Yellow	Y/L	Yellow/Blue
Y	Yellow	R/Y	Red/Yellow	Br/W	Brown/White
P	Pink	R/B	Red/Black	W/G	White/Green
Br	Brown	R/W	Red/White	W/R	White/Red
Ch	Chocolate	L/B	Blue/Black	W/B	White/Black
Gy	Gray	L/R	Blue/Red		
Sb	Sky blue	L/Y	Blue/Yellow		

ELECTRICAL STARTING SYSTEM

CIRCUIT DIAGRAM

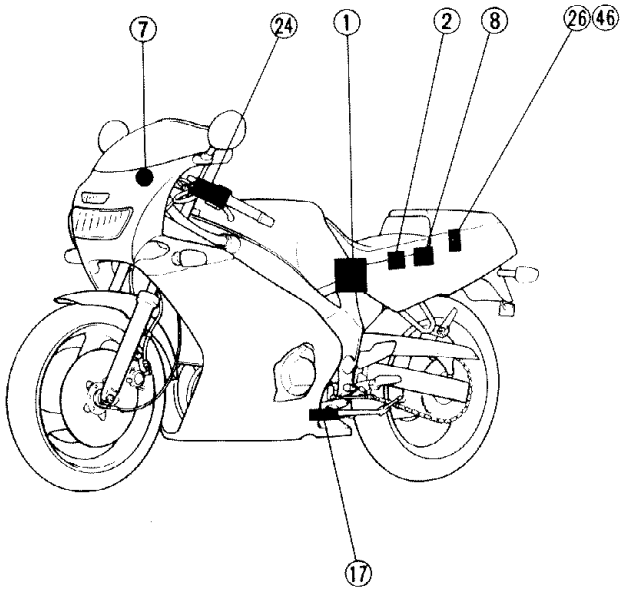


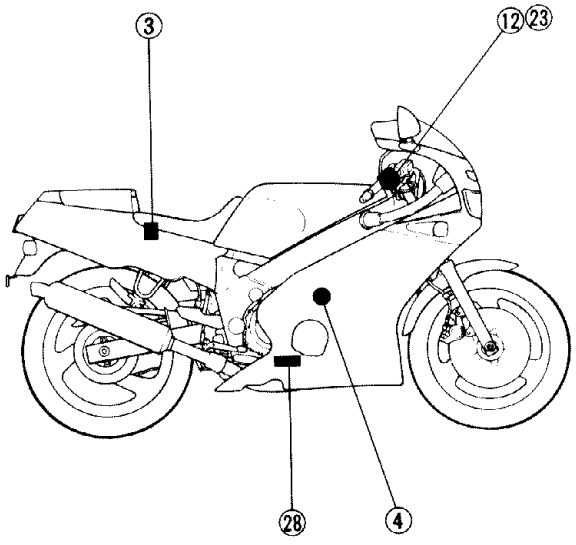
Aformentioned circuit diagram shows electrical starting circuit in circuit diagram.

NOTE:

For the color codes, see page 41.

① Battery
② Fuse (main)
③ Starter relay
④ Starter motor
⑦ Main switch
⑧ Fuse (ignition)
⑫ "ENGINE STOP" switch
⑰ Sidestand switch
㉓ "START" switch
㉔ Clutch switch
㉖ Relay assembly
㉘ Neutral switch
㊻ Ignition circuit cut-off relay





TROUBLESHOOTING

STARTER MOTOR DOES NOT OPERATE.

Procedure

Check;

1. Fuse (main)
2. Battery
3. Starter motor
4. Starter relay
5. Starting circuit cut-off relay
6. Main switch
7. "ENGINE STOP" switch
8. Neutral switch
9. Sidestand switch
10. Clutch switch
11. "START" switch
12. Wiring connection
    (Entire electric starting system)

NOTE:

Remove the following before troubleshooting.

1) Seat (front and rear)
2) Side covers
3) Side cowlings
4) Top cover
5) Air filter case

- Use the following special tool in this troubleshooting.

Pocket tester:
P/N. YU-03112
90890-03112

1. Fuse (main)
- Remove the fuse (main).
- Connect the pocket tester (Ω x 1) to the fuse (main).
- Check the fuse (main) for continuity.

NO CONTINUITY → Replace fuse (main)

CONTINUITY ↓

2. Battery

Check the battery condition.
Refer to the "BATTERY INSPECTION" section in the CHAPTER 3.

Specific gravity:
1.280 at 20°C (68°F)

INCORRECT →
- Refill battery fluid.
- Clean battery terminals.
- Recharge or replace battery.

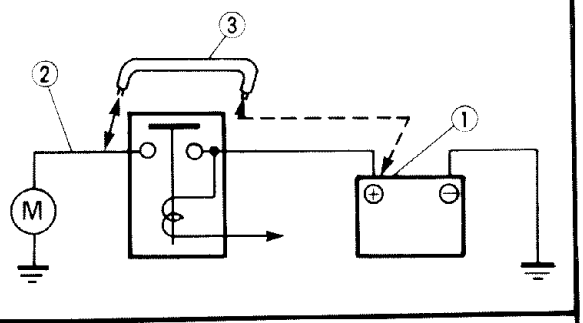
CORRECT ↓

*

*

3. Starter motor

- Connect the battery positive terminal ① and starter motor cable ② using a jumper lead ③ * as shown.



- Check the starter motor operation.

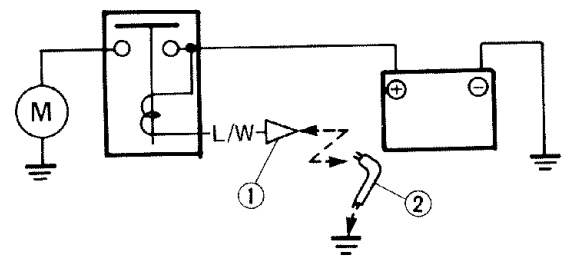
NO OPERATIVE

Repair or replace starter motor.

OPERATIVE

4. Starter relay

- Disconnect the starter relay lead.
- Ground the starter relay lead ① to the frame using the jumper lead ② as shown.



- Check the starter motor operation.

NO OPERATIVE

Replace starter relay.

OPERATIVE

5. Starting circuit cut-off relay (relay assembly)

- Disconnect the relay assembly coupler from the wireharness.
- Connect the pocket tester (Ω x 1) and battery (12V) voltage to the relay assembly coupler terminals.

*

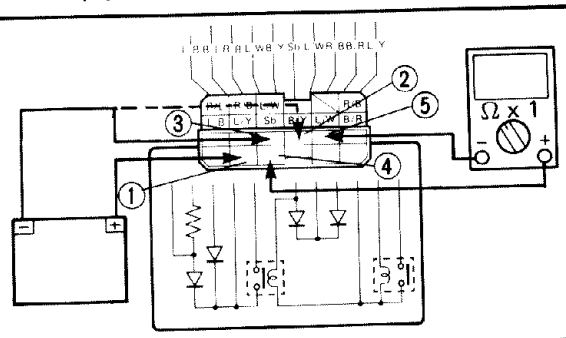
⚠ WARNING

A wire for the jumper lead must have the equivalent capacity as that of the battery lead or more, otherwise it may cause the jumper lead to be burned.
This check is likely to produce sparks, so be sure that no flammable gas or fluid is in the vicinity.

Step 1.
Battery (+) terminal → Red/Black ① terminal.
Battery (-) terminal → Black/Yellow ② terminal.

Step 2.
Battery (+) terminal → Red/Black ① terminal.
Battery (-) terminal → Skyblue ③ terminal.

Tester (+) lead → Blue/White ④ terminal
Tester (-) lead → Blue/White ⑤ terminal



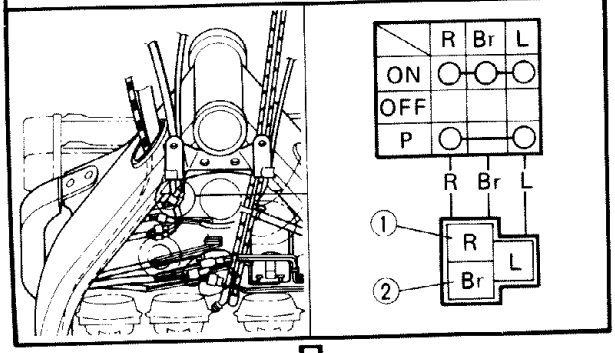
- Check the starting circuit cut-off relay for continuity.

NO CONTINUITY → Replace relay assembly.

CONTINUITY ↓

6. Main switch

- Disconnect the main switch coupler and lead from the wire harness.
- Check the switch component for the continuity between "Red ① and Brown ② ". Refer to the "CHECKING OF SWITCHES" section.



INCORRECT → Replace main switch.

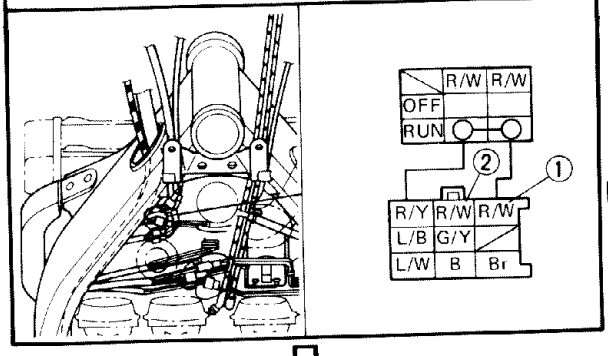
CORRECT ↓

*

*

7. "ENGINE STOP" switch

- Disconnect the handlebar switch (right) coupler from the wire harness.
- Check the switch component for the continuity between "Red/White ① and Red/White ② ". Refer to the "CHECKING OF SWITCHES" section.

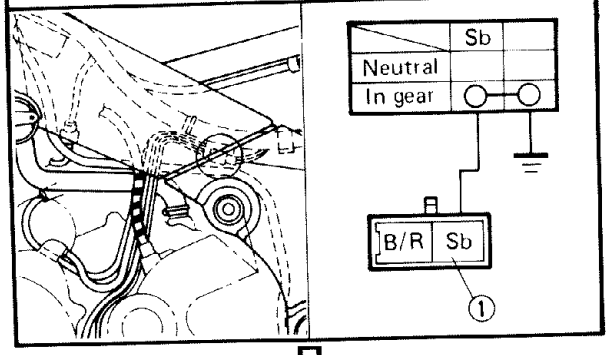


INCORRECT → Replace handlebar switch (right).

CORRECT ↓

8. Neutral switch

- Disconnect the neutral switch coupler from the wire harness.
- Check the switch component for the continuity between "Sky blue ① and Ground". Refer to the "CHECKING OF SWITCHES" section.

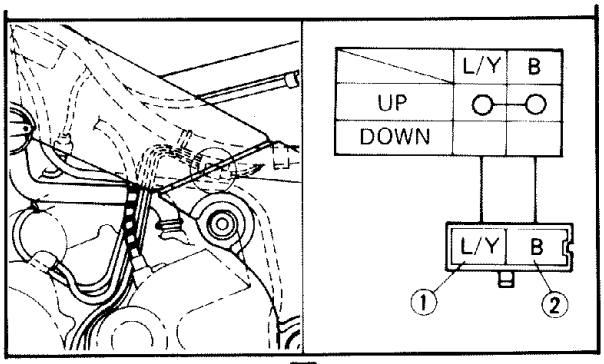


INCORRECT → Replace neutral switch.

CORRECT ↓

9. Sidestand switch

- Disconnect the sidestand switch coupler from the wire harness.
- Check the switch component for the continuity between "Blue/Yellow ① and Black ② ". Refer to the "CHECKING OF SWITCHES" section.



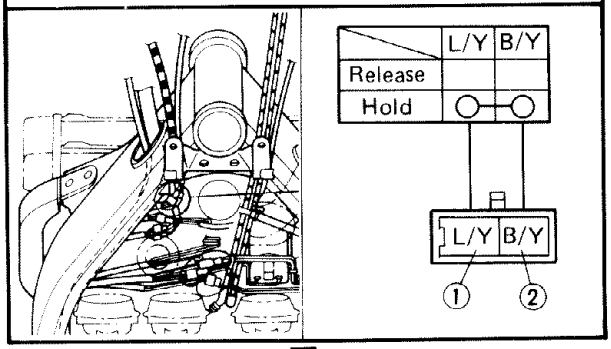
INCORRECT

Replace sidestand switch.

CORRECT

10. Clutch switch

- Disconnect the clutch switch coupler from wire harness.
- Check the switch component for the continuity between "Blue/Yellow ① and Black/Yellow ② ". Refer to the "CHECKING OF SWITCHES" section.



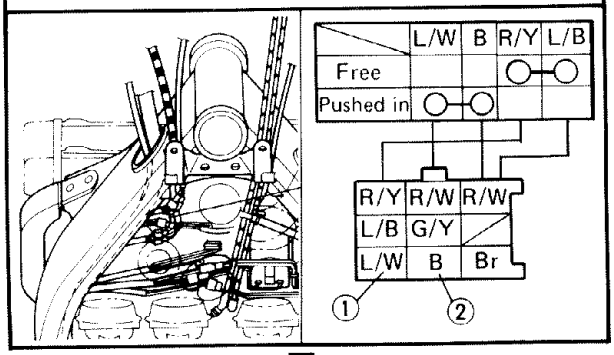
INCORRECT

Replace clutch switch.

CORRECT

11. "START" switch

- Disconnect handlebar switch (right) coupler from wire harness.
- Check the "START" switch component for the continuity between "Blue/White ① and Black ② ". Refer to the "CHECKING OF SWITCHES" section.

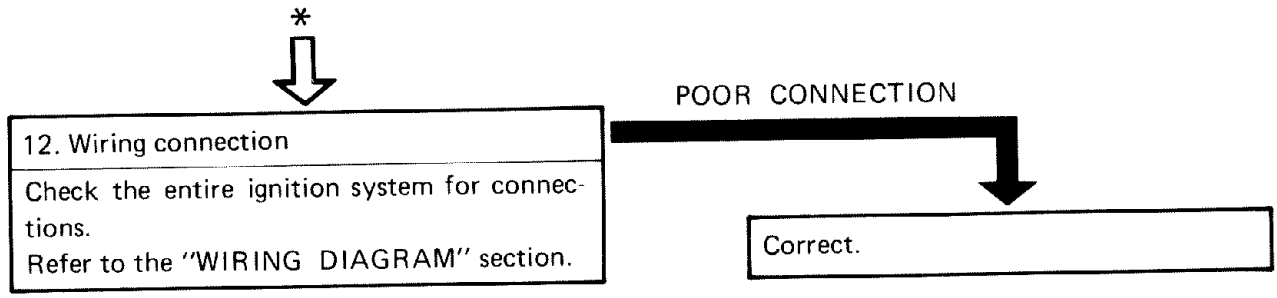


INCORRECT

Replace handlebar switch (right).

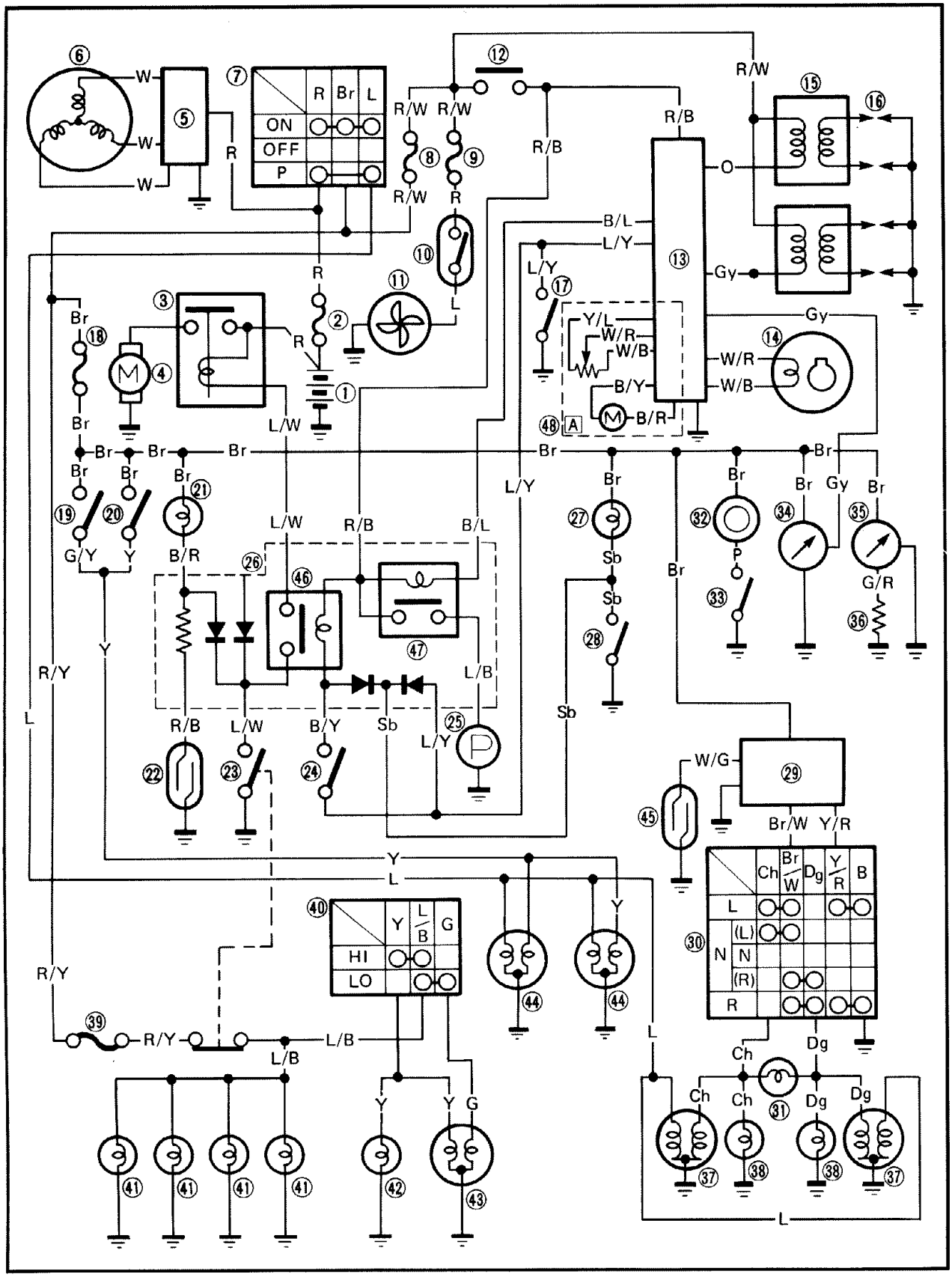
CORRECT

*


*
12. Wiring connection
Check the entire ignition system for connections.
Refer to the "WIRING DIAGRAM" section.
POOR CONNECTION
Correct.

FUEL PUMP SYSTEM

CIRCUIT DIAGRAM

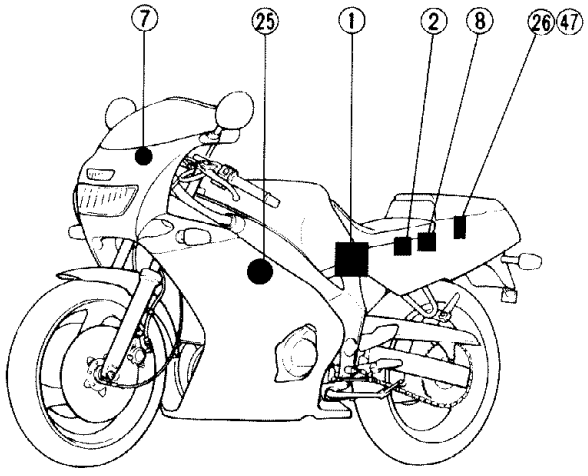


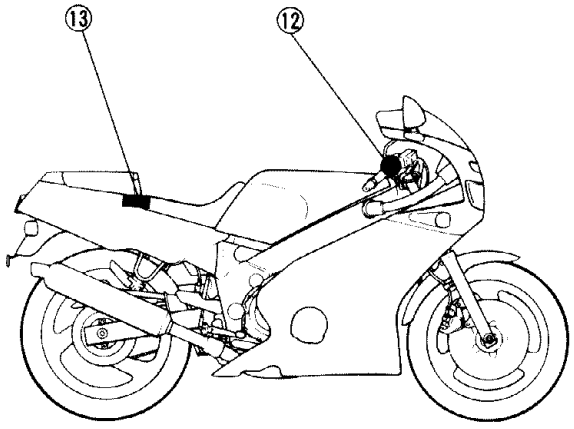
Aforementioned circuit shows fuel pump system circuit in circuit diagram.

NOTE:

For the color codes, see page 41.

① Battery
② Fuse (main)
⑦ Main switch
⑧ Fuse (ignition)
⑫ "ENGINE STOP" switch
⑬ Ignitor unit
㉕ Fuel pump
㉖ Relay assembly
㊼ Fuel pump relay

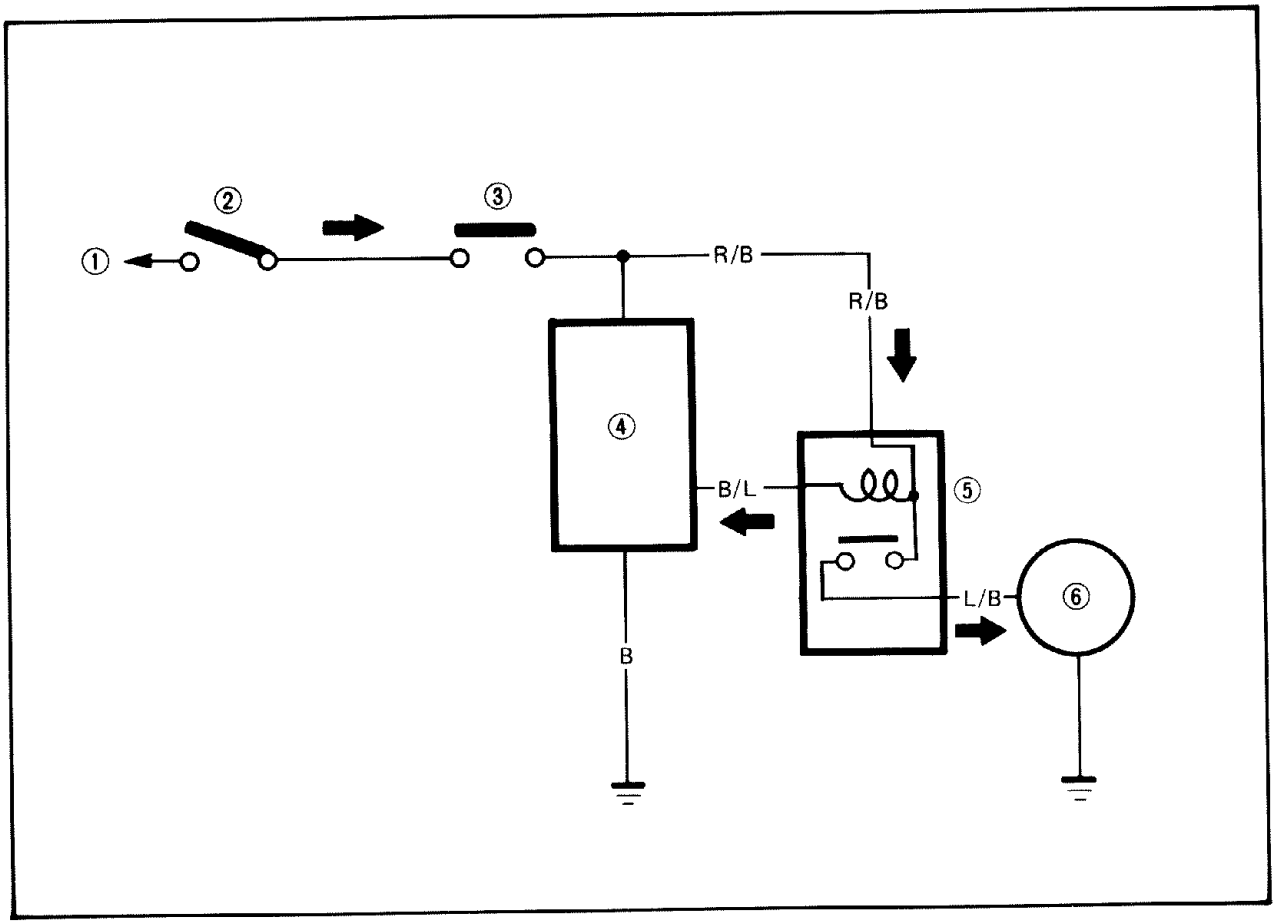




FUEL PUMP CIRCUIT OPERATION

The fuel pump circuit consists of the fuel pump relay, fuel pump, "ENGINE STOP" switch and digital ignition unit.
The digital ignition unit includes the control unit for the fuel pump.
The fuel pump starts and stops as indicated in the chart below.

① To main fuse and battery
② Main switch
③ "ENGINE STOP" switch
④ Digital ignitor unit
⑤ Fuel pump relay
⑥ Fuel pump



FUEL PUMP		
START		STOP
• Main/Engine stop switch turned to "ON"	• Engine turned on	• Engine turned off
For about 5 seconds when carburetor fuel level is low	After about 0.1 second	After about 5 seconds

TROUBLESHOOTING

FUEL PUMP FAILS TO OPERATE.

Procedure

1. Fuse (main)
2. Battery
3. Main switch
4. "ENGINE STOP" switch
5. Fuel pump relay (relay assembly)
6. Fuel pump
7. Wiring connection (Entire fuel system)

NOTE:

- Remove the following before troubleshooting.
  1) Seat (front and rear)
  2) Top cover
  3) Fuel tank
- Use the following special tool in this troubleshooting.

Pocket tester:
YU-03112
90890-03112

1. Fuse (main)

- Remove the fuse (main) and (ignition).
- Connect the pocket tester (Ω x 1) to the fuse (main).
- Check the fuse for continuity.

NO CONTINUITY → Fuse is faulty, replace it.

CONTINUITY ↓

2. Battery

- Check the battery condition. Refer to the "BATTERY INSPECTION" section in the CHAPTER 3.

Specific gravity:
1.280 at 20°C (68°F)

INCORRECT →
- Refill battery fluid.
- Clean battery terminals.
- Recharge or replace battery.

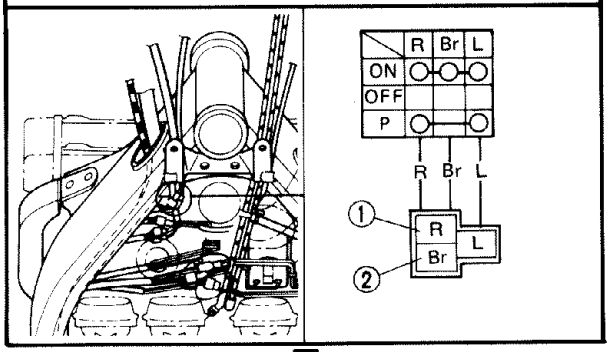
CORRECT ↓

*

*

3. Main switch

- Disconnect the main switch coupler and lead from the wire harness.
- Check the switch component for the continuity between "Red ① and Brown ② " Refer to the "CHECKING OF SWITCHES" section.



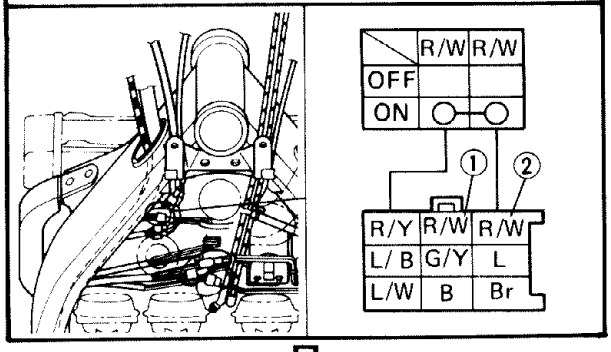
INCORRECT

Replace main switch.

CORRECT

4. "ENGINE STOP" switch

- Disconnect the "ENGINE STOP" switch coupler from the wire harness.
- Check the switch component for the continuity between "Red/White ① and Red/White ② ". Refer to the "CHECKING OF SWITCHES" section.



INCORRECT

Replace handlebar switch (right).

CORRECT

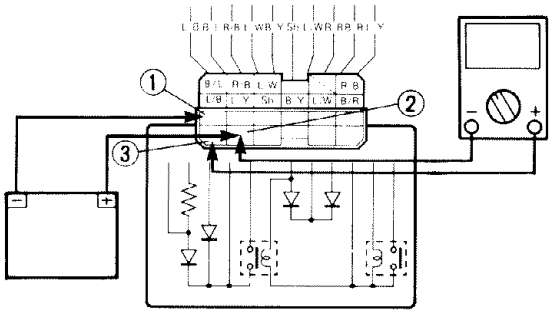
*

*

5. Fuel pump relay (relay assembly)

- Disconnect the fuel pump relay coupler from the wire harness.
- Connect the pocket tester (Ω x 1) and battery (12V) voltage to the fuel pump relay coupler terminals.

Tester (+) lead → Blue/Black ① terminal
Tester (–) lead → Red/Black ② terminal
Battery (+) lead → Red/Black ② terminal
Battery (–) lead → Black/Blue ③ terminal



- Check the relay for continuity.

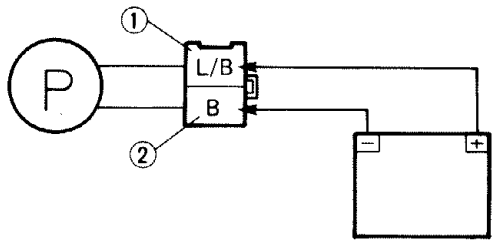
NO CONTINUITY → Replace relay assembly.

CONTINUITY ↓

6. Fuel pump

- Disconnect the fuel pump coupler from the wire harness.
- Connect the battery voltage as shown.

Battery (+) lead → Blue/Black ① terminal
Battery (-) lead → Black ② terminal

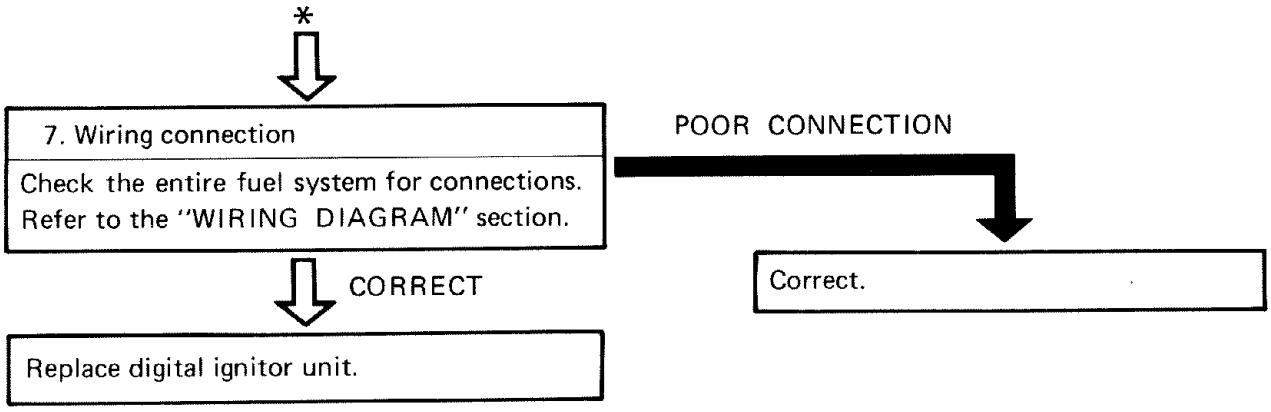


- Check the fuel pump operation.

NO OPERATIVE → Replace fuel pump.

OPERATIVE ↓

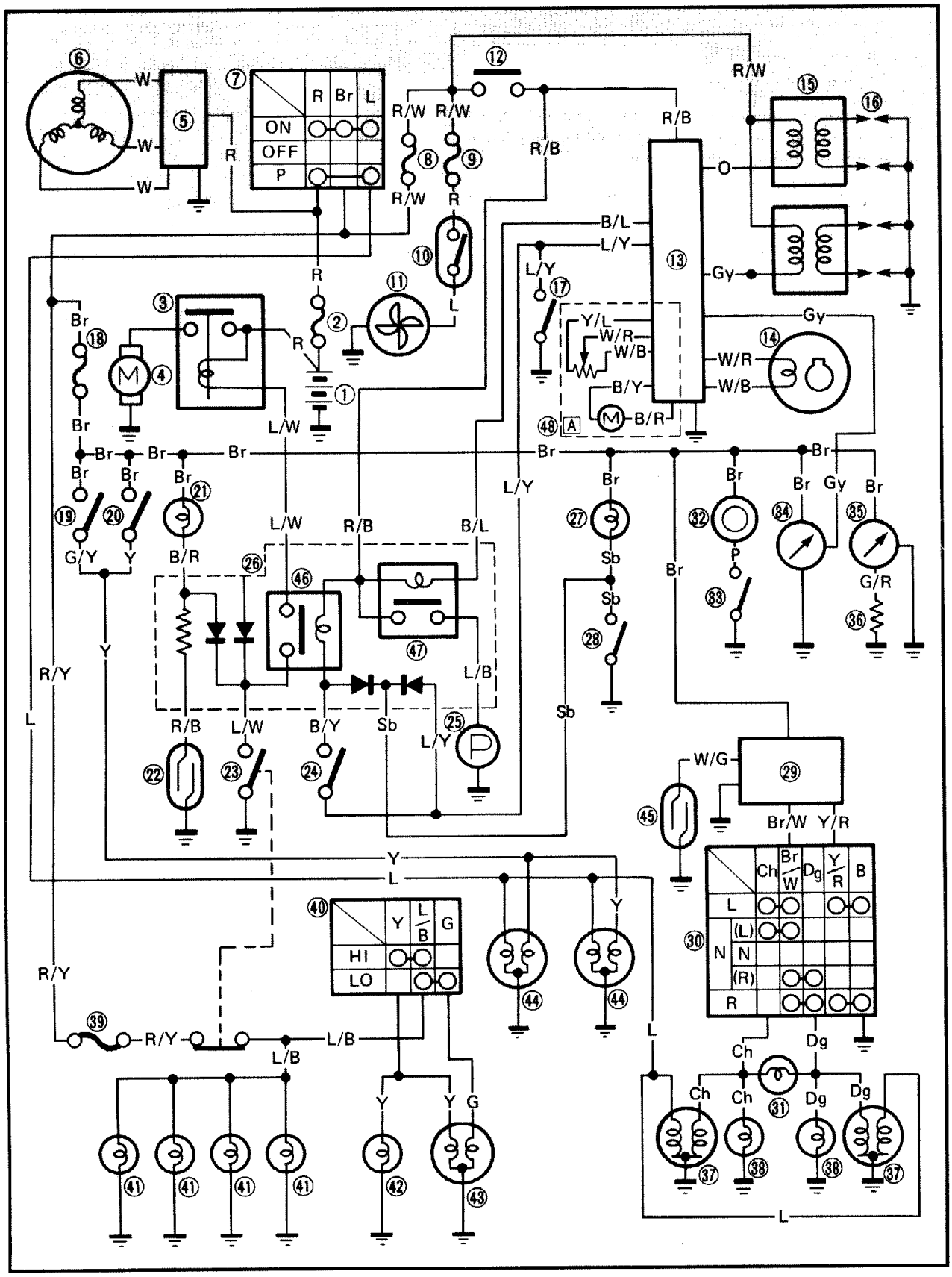
*


*
7. Wiring connection
Check the entire fuel system for connections.
Refer to the "WIRING DIAGRAM" section.
POOR CONNECTION
Correct.
CORRECT
Replace digital ignitor unit.

— MEMO —

EXUP SYSTEM (FOR CALIFORNIA ONLY)

CIRCUIT DIAGRAM

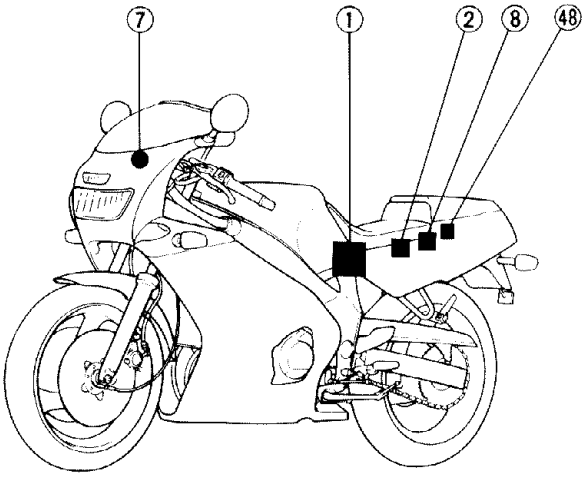


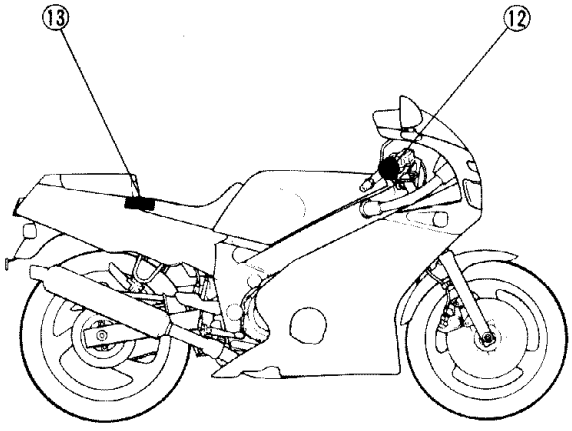
Aformentioned circuit diagram shows EXUP circuit in circuit diagram.

NOTE:

For the color codes, see page 41.

① Battery
② Fuse (main)
⑦ Main switch
⑧ Fuse (ignition)
⑫ "ENGINE STOP" switch
⑬ Ignitor unit
㊽ "EXUP" servo motor
[A] For California only





TROUBLESHOOTING

EXUP SERVOMOTOR DOES NOT OPERATE.

Procedure (1)
Check;
1. EXUP servo motor operation (with EXUP servo motor coupler connected)
2. Voltage
3. EXUP servo motor operation (with EXUP servo motor coupler disconnected)
4. EXUP servo motor resistance (potentiometent resistance)
5. Wiring connection (entire EXUP system)

Procedure (2)
Check;
1. Fuse "MAIN/IGNITION"
2. Battery
3. Main switch
4. "ENGINE STOP" switch
5. Wiring connection (entire EXUP system)

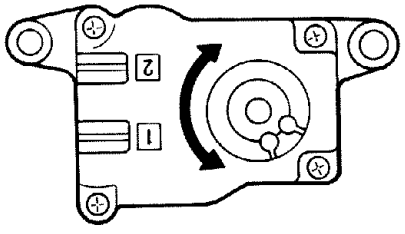
NOTE:
- Remove the following parts before troubleshooting.
  1) Seat (front and rear)
  2) Side cover (left)
  3) Side cowling (left)
- Use the following special tool in this troubleshooting.

Pocket tester:
YU-03112
90890-03112

Procedure (1)

1. EXUP servo motor operation (with EXUP servo motor coupler connected)

- Disconnect the EXUP cables at EXUP servo motor pully side.
- Start the engine and rev it up to 2,000 r/min.



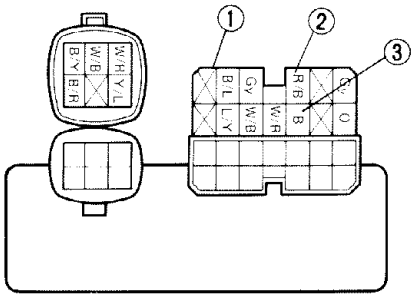
PULLY TURNS → Check the EXUP cables connection. If connection is correct. Inspect the EXUP valve and cables. Refer to "ENGINE OVERHAUL" section in the CHAPTER 4.

PULLY DOES NOT TURN ↓

2. Voltage

- Connect the pocket tester (DC20V) to the ignitor unit ① connector.

Tester (+) lead → Red/Black ② terminal
Tester (–) lead → Black ③ terminal



- Turn the main switch to "ON" and check for the voltage between "Red/Black and Black".

Voltage (Red/Black – Black):
10 ~ 14V

OUT OF SPECIFICATION

Go to the "Procedure (2)".

MEETS SPECIFICATION

3. EXUP servo motor operation (with EXUP servo motor coupler disconnected)

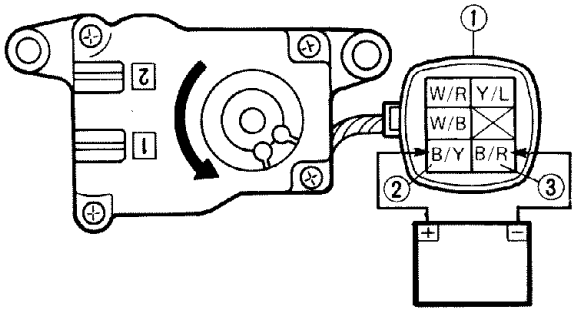
- Disconnect the EXUP cables at EXUP servo motor pulley side.
- Disconnect the EXUP servo motor coupler ① from the wireharness.
- Connect the battery leads to the EXUP servo motor coupler.

Battery positive lead → Black/Yellow ② lead
Battery negative lead → Black/Red ③ lead

- Check for pully operation by allowing it to rotate serveral times.

CAUTION:

This test should be performed within a few seconds to prevent further damage.



PULLY DOES NOT TURN

Replace EXUP servo motor.

PULLY TURNS

*

*

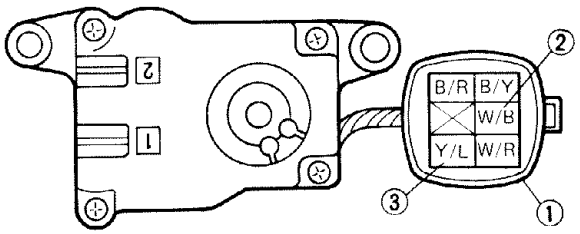
4. EXUP servo motor resistance (potentiometer resistance)

- Disconnect the EXUP servo motor coupler ① from the wireharness.

Steps 1:

- Connect the pocket tester (Ω x 1K) to the EXUP servo motor couplers.

Tester (+) lead → White/Black ② lead
Tester (–) lead → Yellow/Blue ③ lead



- Measure the EXUP servo motor resistance.

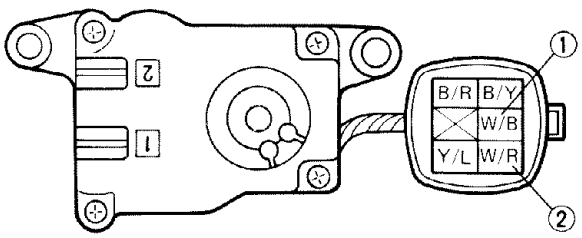
EXUP servo motor resistance:
6.7 ~ 10 kΩ
(White/Black – Yellow/Blue)

OUT OF SPECIFICATION

Steps 2:

- Connect the pocket tester (Ω x 1K) to the EXUP servo motor coupler.

Tester (+) lead → White/Black ① lead
Tester (–) lead → White/Red ② lead



- Measure the EXUP servo motor resistance while turning the pully slowly.

EXUP servo motor is faulty, replace it.